Appendix A

Michael Vilbert is an expert in cost of capital, financial planning and valuation who has advised clients on these matters in the context of a wide variety of investment and regulatory decisions. He received his Ph.D. in Financial Economics from the Wharton School of the University of Pennsylvania, an MBA from the University of Utah, an M.S. from the Fletcher School of Law and Diplomacy, Tufts University, and a B.S. degree from the United States Air Force Academy. He joined The Brattle Group in 1994 after a career as an Air Force officer, where he served as a fighter pilot, intelligence officer, and professor of finance at the Air Force Academy.

REPRESENTATIVE CONSULTING EXPERIENCE

- In a securities fraud case, Dr. Vilbert designed and created a model to value the private placement stock of a drug store chain as if there had been full disclosure of the actual financial condition of the firm. He analyzed key financial data and security analysts' reports regarding the future of the industry in order to recreate pro forma balance sheet and income statements under a variety of scenarios designed to establish the value of the firm.

- For pharmaceutical companies rebutting price-fixing claims in antitrust litigation, Dr. Vilbert was a member of a team that prepared a comprehensive analysis of industry profitability. The analysis replicated, tested and critiqued the major recent analyses of drug costs, risks and returns. The analyses helped develop expert witness testimony to rebut allegations of excess profits.

- For an independent electric power producer, Dr. Vilbert created a model that analyzed the reasonableness of rates and costs filed by a natural gas pipeline. The model not only duplicated the pipeline's rates, but it also allowed simulation of a variety of "what if" scenarios associated with cost recovery under alternative time patterns and joint cost allocations. Results of the analysis were adopted by the intervenor group for negotiation with the pipeline.

- For the CFO of an electric utility, Dr. Vilbert developed the valuation model used to support a stranded cost estimation filing. The case involved a conflict between two utilities over the responsibility for out-of-market costs associated with a power purchase contract between them. In addition, he advised and analyzed cost recovery mechanisms that would allow full recovery of the stranded costs while providing a rate reduction for the company's rate payers.

- Dr. Vilbert has testified as well as assisted in the preparation of testimony and the development of estimation models in numerous cost of capital cases for natural gas pipeline, water utility and electric utility clients before the Federal Energy Regulatory Commission ("FERC") and state regulatory commissions. These have spanned standard estimation techniques (e.g., Discounted Cash Flow and Risk Positioning models). He has also developed and applied more advanced models specific to the industries or lines of business in question, e.g., based on the structure and risk characteristics of cash flows, or based on multi-factor models that better characterize regulated industries.

- Dr. Vilbert has valued several large, residual oil-fired generating stations to evaluate the possible conversion to natural gas or other fuels. In these analyses, the expected pre- and post-conversion station values were computed using a range of market electricity and fuel cost conditions.

- For a major western electric utility, Dr. Vilbert helped prepare testimony that analyzed the prudence of QF contract enforcement. The testimony demonstrated that the utility had not been compensated in its allowed cost of capital for major disallowances stemming from QF contract management.

- Dr. Vilbert analyzed the economic need for a major natural gas pipeline expansion to the Midwest. This involved evaluating forecasts of natural gas use in various regions of the United States and the effect of additional supplies on the pattern of natural gas pipeline use. The analysis was used to justify the expansion before the FERC and the National Energy Board of Canada.

- For a Public Utility Commission in the Northeast, Dr. Vilbert analyzed the auction of an electric utility's purchase power agreements to determine whether the outcome of the auction was in the ratepayers' interest. The work involved the analysis of the auction procedures as well as the benefits to ratepayers of transferring risk of the PPA payments to the buyer.

- Dr. Vilbert led a team tasked to determine whether bridge tolls were "just and reasonable" for a non-profit port authority. Determination of the cost of service for the authority required estimation of the value of the authority's assets using the trended original cost methodology as well as evaluation of the operations and maintenance budgets. Investment costs, bridge traffic information and inflation indices covering a 75 year period were utilized to estimate the value of four bridges and a passenger transit line valued in excess of $1 billion.

- Dr. Vilbert helped a recently privatized railroad in Brazil develop an estimate of its

revenue requirements, including a determination of the railroad's cost of capital. He also helped evaluate alternative rate structures designed to provide economic incentives to shippers as well as to the railroad for improved service. This involved the explanation and analysis of the contribution margin of numerous shipper products, improved cost analysis and evaluation of bottlenecks in the system.

- For a utility in the Southeast, Dr. Vilbert quantified the company's stranded costs under several legislative electric restructuring scenarios. This involved the evaluation of all of the company's fossil and nuclear generating units, its contracts with Qualifying Facilities and the prudence of those QF contracts. He provided analysis concerning the impact of securitizing the company's stranded costs as a means of reducing the cost to the ratepayers and several alternative designs for recovering stranded costs.

- For a recently privatized electric utility in Australia, Dr. Vilbert evaluated the proposed regulatory scheme of the Australian Competition and Consumer Commission for the company's electric transmission system. The evaluation highlighted the elements of the proposed regulation which would impose uncompensated asymmetric risks on the company and the need to either eliminate the asymmetry in risk or provide additional compensation so that the company could expect to earn its cost of capital.

- For an electric utility in the Southwest, Dr. Vilbert helped design and create a model to estimate the stranded costs of the company's portfolio of Qualifying Facilities and Power Purchase contracts. This exercise was complicated by the many variations in the provisions of the contracts that required modeling in order to capture the effect of changes in either the performance of the plants or in the estimated market price of electricity.

- Dr. Vilbert helped prepare the testimony responding to a FERC request for further comments on the appropriate return on equity for electric transmission facilities. In addition, Dr. Vilbert was a member of the team that made a presentation to the FERC staff on the expected risks of the unbundled electric transmission line of business.

- Dr. Vilbert and Mr. Frank C. Graves, also of The Brattle Group, prepared testimony evaluating an innovative Canadian stranded cost recovery procedure involving the auctioning of the output of the province's electric generation plants instead of the plants themselves. The evaluation required the analysis of the terms and conditions of the long-term contracts specifying the revenue requirements of the plants for their entire forecasted remaining economic life and required an estimate of the cost of capital for the plant owners under this new stranded cost recovery concept.

- Dr. Vilbert served as the neutral arbitrator for the valuation of a petroleum products tanker. The valuation required analysis of the Jones Act tanker market and the supply and demand balance of the available U.S. constructed tanker fleet.

- Dr. Vilbert evaluated the appropriate "bareboat" charter rate for an oil drilling platform for the renewal period following the end of a long-term lease. The evaluation required analysis of the market for oil drilling platforms around the world including trends in construction and labor costs and the demand for platforms in varying geographical environments.

PRESENTATIONS

"Utility Distribution Cost of Capital," *EEI Electric Rates Advanced Course*, Bloomington, IN, 2002, 2003.

"Issues for Cost of Capital Estimation," with Bente Villadsen, *Edison Electric Institute Cost of Capital Conference*, Chicago, IL, February 2004.

"Not Your Father's Rate of Return Methodology," *Utility Commissioners/Wall Street Dialogue*, NY, May 2004.

"Utility Distribution Cost of Capital," *EEI Electric Rates Advanced Course*, Madison, WI, July 2004.

"Cost of Capital Estimation: Issues and Answers," *MidAmerican Regulatory Finance Conference*, Des Moines, IA, April 7, 2005.

"Cost of Capital - Explaining to the Commission - Different ROEs for Different Parts of the Business," *EEI Economic Regulation & Competition Analysts Meeting*, May 2, 2005.

"Current Issues in Cost of Capital," with Bente Villadsen, *EEI Electric Rates Advanced Course*, Madison, WI, 2005.

"Current Issues in Estimating the Cost of Capital," *EEI Electric Rates Advanced Course*, Madison, WI, 2006, 2007, 2008.

"Revisiting the Development of Proxy Groups and Relative Risk Analysis," Society of Utility and Regulatory Financial Analysts: 39th Financial Forum, April 2007.

"Current Issues in Explaining the Cost of Capital to Utility Commissions" Cost of Capital Seminar,

Philadelphia, PA, 2008.

ARTICLES

"Flaws in the Proposed IRS Rule to Reinstate Amortization of Deferred Tax Balances Associated with Generation Assets Reorganized in Industry Restructuring," by Frank C. Graves and Michael J. Vilbert, white paper for *Edison Electric Institute* (EEI) to the IRS, July 25, 2003.

"The Effect of Debt on the Cost of Equity in a Regulatory Setting," by A. Lawrence Kolbe, Michael J. Vilbert, Bente Villadsen and The Brattle Group, *Edison Electric Institute*, April 2005.

"Measuring Return on Equity Correctly: Why current estimation models set allowed ROE too low," by A. Lawrence Kolbe, Michael J. Vilbert and Bente Villadsen, *Public Utilities Fortnightly*, August 2005.

"Understanding Debt Imputation Issues," by Michael J. Vilbert, Bente Villadsen and Joseph B. Wharton, *Edison Electric Institute*, August 2008.

TESTIMONY

Direct and rebuttal testimony before the Alberta Energy and Utilities Board on behalf of TransAlta Utilities Corporation in the matter of an application for approval of its 1999 and 2000 generation tariff, transmission tariff, and distribution revenue requirement, October 1998.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Central Maine Power in Docket No. ER00-982-000, December 1999.

Direct testimony before the Alberta Energy and Utilities Board on behalf of TransAlta Utilities Corporation for approval of its 2001 transmission tariff, May 2000.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Mississippi River Transmission Corporation in Docket No. RP01-292-000, March 2001.

Written evidence, rebuttal, reply and further reply before the National Energy Board in the matter of an application by TransCanada PipeLines Limited for orders pursuant to Part I and Part IV of the *National Energy Board Act*, Order AO-1-RH-4-2001, May 2001, Nov. 2001, Feb. 2002.

Written evidence before the Public Utility Board on behalf of Newfoundland & Labrador Hydro - Rate Hearings, October 2001.

Direct testimony (with William Lindsay) before the Federal Energy Regulatory Commission on behalf of DTE East China, LLC in Docket No. ER02-1599-000, April 2002.

Direct and rebuttal reports before the Arbitration Panel in the arbitration of stranded costs for the City of Casselberry, FL, Case No. 00-CA-1107-16-L, July 2002.

Direct reports before the Arbitration Board for Petroleum products trade in the Arbitration of the Military Sealift Command vs. Household Commercial Financial Services, fair value of sale of the Darnell, October 2002.

Direct testimony and hearing before the Arbitration Panel in the arbitration of stranded costs for the City of Winter Park, FL, In the Circuit Court of the Ninth Judicial Circuit in and for Orange County, FL, Case No. C1-01-4558-39, December 2002.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Florida Power Corporation, dba Progress Energy Florida, Inc. in Docket No. SC03-1-000, March 2003.

Direct report before the Arbitration Panel in the arbitration of stranded costs for the Town of Belleair, FL, Case No. 000-6487-C1-007, April 2003.

Direct and rebuttal reports before the Alberta Energy and Utilities Board in the matter of the Alberta Energy and Utilities Board Act, R.S.A. 2000, c. A-17, and the Regulations under it; in the matter of the Gas Utilities Act, R.S.A. 2000, c. G-5, and the Regulations under it; in the matter of the Public utilities Board Act, R.S.A. 2000, c. P-45, as amended, and the Regulations under it; and in the matter of Alberta Energy and Utilities Generic Cost of Capital Hearing, Proceeding No. 1271597, July 2003, November 2003.

Written evidence before the National Energy Board in the matter of the National Energy Board Act, R.S.C. 1985, c. N−7, as amended, (Act) and the Regulations made under it; and in the matter of an application by TransCanada PipeLines Limited for orders pursuant to Part IV of the *National Energy Board Act*, for approval of Mainline Tolls for 2004, RH-2-2004, January 2004.

Direct and rebuttal testimony before the Public Service Commission of West Virginia, on Cost of Capital for West Virginia-American Water Company, Case No 04-0373-W-42T, May 2004.

Direct and rebuttal testimony before the Federal Energy Regulatory Commission on Energy Allocation of Debt Cost for Incremental Shipping Rates for Edison Mission Energy, Docket No. RP04-274-000, December 2004 and March 2005.

Direct testimony before the Arizona Corporation Commission, Cost of Capital for Paradise Valley Water Company, a subsidiary of Arizona-American Water Company, Docket No. WS-01303A-05, May 2005.

Written evidence before the Ontario Energy Board, Cost of Capital for Union Gas Limited, Inc., Docket No. EB-2005-0520, January 2006.

Direct and rebuttal testimony before the Pennsylvania Public Utility Commission, Return on Equity for Metropolitan Edison Company, Docket No. R-00061366 and Pennsylvania Electric Company, Docket No. R-00061367, April 2006 and August 2006.

Expert report in the United States Tax Court, Docket No. 21309-05, 34th Street Partners, DH Petersburg Investment, LLC and Mid-Atlantic Finance, Partners Other than the Tax Matters Partner, Petitioner, v. Commissioner of Internal Revenue, Respondent, July 28, 2006.

Direct and supplemental testimony before the Federal Energy Regulatory Commission, Docket No. ER06-427-003, on behalf of Mystic Development, LLC on the Cost of Capital for Mystic 8 and 9 Generating Plants Operating Under Reliability Must Run Contract, August 2006 and September 2006.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER07-46-000, on behalf of Northwestern Corporation on the Cost of Capital for Transmission Assets, October 2006.

Direct and rebuttal testimony before the Tennessee Regulatory Authority, Case No. 06-00290, on behalf of Tennessee American Water Company, on the Cost of Capital, November, 2006 and April 2007.

Direct and rebuttal testimony before the Public Service Commission of Wisconsin, Docket No. 5-UR-103, on behalf of Wisconsin Energy Corporation, on the Cost of Capital for Wisconsin Electric Power Company and Wisconsin Gas LLC, May 2007 and October 2007.

Rebuttal testimony before the California Public Utilities Commission, Docket No. A. 07-01-036-39, on behalf of California-American Water Company, on the Cost of Capital, May 2007.

Direct testimony before the Public Utilities Commission of the State of South Dakota, Docket No. NG-07-013, on behalf of NorthWestern Corporation, on the Cost of Capital for NorthWestern Energy Company's natural gas operations in South Dakota, June 2007.

Direct, supplemental and rebuttal testimony before the Public Utilities Commission of Ohio, Case No. 07-551-EL-AIR, Case No. 07-552-EL-ATA, Case No. 07-553-EL-AAM, and Case No. 07-554-

EL-UNC, on behalf of Ohio Edison Company, The Toledo Edison Company, and The Cleveland Electric Illuminating Company, on the cost of capital for the FirstEnergy Company's Ohio electric distribution utilities, June 2007, January 2008 and February 2008.

Direct testimony before the Public Service Commission of West Virginia, Case No. 07-0998-W-42T, on behalf of West Virginia American Water Company on cost of capital, July 2007.

Direct and rebuttal testimony before the State Corporation Commission of Virginia, Case No. PUE-2007-00066, on behalf of Virginia Electric and Power Company on the cost of capital for its southwest Virginia coal plant, July 2007 and December 2007.

Direct and Supplemental testimony before the Public Utilities Commission of Ohio, Case No. 07-829-GA-AIR, Case No. 07-830-GA-ALT, and Case No. 07-831-GA-AAM, on behalf of Dominion East Ohio Company, on the rate of return for Dominion East Ohio's natural gas distribution operations, September 2007 and June 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-92-000 to Docket No. ER08-92-003, on behalf of Virginia Electric and Power Company, on the Cost of Capital for Transmission Assets, October 2007.

Direct and rebuttal testimony before the California Public Utilities Commission, Docket No. A. 07-01-022, on behalf of California-American Water Company, on the Effect of a Water Revenue Adjustment Mechanism on the Cost of Capital, October 2007 and November 2007.

Written direct and reply evidence before the National Energy Board in the matter of the National Energy Board Act, R.S.C. 1985, c. N−7, as amended, and the Regulations made thereunder; and in the matter of an application by Trans Québec & Maritimes PipeLines Inc. for orders pursuant to Part I and Part IV of the *National Energy Board Act*, for determining the overall fair return on capital for tolls charged by TQM, December 2007 and September 2008.

Comments in support of The Interstate Natural Gas Association of America's Additional Initial Comments on the FERC's Proposed Policy Statement with regard to the Composition of Proxy Companies for Determining Gas and Oil Pipeline Return on Equity, Docket No. PL07-2-000, December, 2007.

Direct and rebuttal testimony on the Cost of Capital before the Tennessee Regulatory Authority, Case No. 08-00039, on behalf of Tennessee American Water Company, March and August 2008.

Post-Technical Conference Affidavit on behalf of The Interstate Natural Gas Association of America in response to the Reply Comments of the State of Alaska with regard the FERC's Proposed Policy Statement on to the Composition of Proxy Companies for Determining Gas and Oil Pipeline Return

on Equity, Docket No. PL07-2-000, March, 2008

Direct and rebuttal testimony before the California Public Utilities Commission, Docket No. A.08-05-003, on behalf of California-American Water Company, concerning Cost of Capital, May 2008 and August 2008.

Rebuttal testimony on the financial risk of Purchased Power Agreements, before the Public Utilities Commission of the State of Colorado, Docket No. 07A-447E, in the matter of the application of Public Service Company of Colorado for approval of its 2007 Colorado Resource Plan, June 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. RP08-426-000, on behalf of El Paso Natural Gas Company, on the Cost of Capital for Natural Gas Transmission Assets, June 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-1207-000, on behalf of Virginia Electric and Power Company, on the incentive Cost of Capital for investment in New Electric Transmission Assets, June 2008

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-1233-000, on behalf of Public Service Electric and Gas Company, on the Cost of Capital for Electric Transmission Assets, July 2008.

Direct and rebuttal testimony before the Public Service Commission of West Virginia, Case No. 08-0900-W-42t, on behalf of West Virginia-American Water Company concerning the Cost of Capital for Water Utility assets, July 2008 and November 2008.

Direct and rebuttal testimony before the Public Utilities Commission of Ohio, Case No. 08-935-EL-SSO, on behalf of Ohio Edison Company, The Toledo Edison Company, and The Cleveland Electric Illuminating Company, with regard to the test to determine Significantly Excessive Earnings within the context of Senate Bill No. 221, September 2008 and October 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-249-000, on behalf of Public Service Electric and Gas Company, on the incentive Cost of Capital for Mid-Atlantic Power Pathway Electric Transmission Assets, November 2008.

Direct testimony before the Public Service Commission of West Virginia, Case No. 08-1783-G-PC, on behalf of Dominion Hope Gas Company concerning the Cost of Capital for Gas Local Distribution Company assets, November 2008.

Direct Testimony before the Alberta Utilities Commission in the matter of the Alberta Utilities

Commission Act, S.A. 2007, c. A-37.2, as amended, and the regulations made thereunder; and IN THE MATTER OF the Gas Utilities Act, R.S.A. 2000, c. G-5, as amended, and the regulations made thereunder; and IN THE MATTER OF the Public Utilities Act, R.S.A. 2000, c. P-45, as amended, and the regulations made thereunder; and IN THE MATTER OF Alberta Utilities Commission 2009 Generic Cost of Capital Hearing, Application No. 1578571/Proceeding No. 85. 2009 Generic Cost of Capital Proceeding for AltaGas Utilities Inc., November 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-548-000, on behalf of ITC Great Plains, LLC, on the Cost of Capital for Electric Transmission Assets, January 2009.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-681-000, on behalf of Green Power Express, LLP, on the Cost of Capital for Electric Transmission Assets, February 2009.

APPENDIX B

SAMPLE SELECTION AND ESTIMATION OF MARKET VALUES AND IMPUTED DEBT

I. SAMPLE SELECTION AND THE SAMPLE'S CHARACTERISTICS

Q1. Please describe how you selected the sample of electric utilities.

A1. The goal was to create a sample of companies whose primary business is as a regulated electric utility with business risk generally similar to that of Wisconsin Power and Light Company. To construct this sample, I formed a universe of 62 companies classified as electric companies under East, Central and West categories listed in *Value Line*. From this group, I first eliminated companies if their operating regions were outside of the continental USA or if they were primarily or solely engaged in generation and/or transmission. I then applied my standard selection criteria outlined earlier to remove companies that have characteristics that may bias the cost of capital estimates.

Specifically, I eliminated all companies whose S&P bond rating as reported by Bloomberg was not investment grade, i.e., less than BBB-, in any of the previous five years. To guard against measurement bias caused by "thin trading," I also restricted the sample to companies with total operating revenues greater than $300 million (USD) in 2008 as reported by Bloomberg.[1] I also required that the companies have had no significant mergers and acquisition activity over the past five years. The screen for merger activity was primarily done by scanning each company's news history on Bloomberg and a search of company web pages. To ensure additional comparability to Wisconsin Power and Light Company's operations, companies whose share of regulated assets were not classified by the Edison Electric Institute ("EEI") as either "Mostly Regulated" or "Regulated" were removed.[2]

Finally, I required that the companies have historical data available from Bloomberg for the relevant period and had no dividend cuts or substantial restatement of financial statements in the past five years, since the latter can be signs of financial distress.

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[1] Data was reviewed during the last week of February 2009.

[2] EEI has three classifications for electric utilities based upon the percentage of total assets that are regulated. The categories are Regulated (> 80% regulated), Mostly Regulated (50-80% regulated) and Diversified (< 50% regulated). See EEI Q4 2008 Financial Update, the classifications are based on data as of 12/31/2007.

A total of 18 companies met all of these requirements. Table B1 below shows the companies chosen for the sample.

Table B1

	Company
1	American Electric Power Co Inc
2	Cleco Corp
3	Consolidated Edison Inc
4	Empire District Electric Co/The
5	Entergy Corp
6	FirstEnergy Corp
7	IDACORP Inc
8	MGE Energy Inc
9	NSTAR
10	Otter Tail Corp
11	Pepco Holdings Inc
12	Pinnacle West Capital Corp
13	PPL Corp
14	Progress Energy Inc
15	SCANA Corp
16	Southern Co
17	Wisconsin Energy Corp
18	Xcel Energy Inc

Q2. Please elaborate on how companies were eliminated from your sample.

A2. Three companies were eliminated because their operating regions were outside of the continental USA. Four companies were excluded due to having less than an investment grade credit rating. Four companies were removed for having less than $300 million in 2008 revenues. Of the remaining companies, 24 had excessive merger and acquisition activity ("M&A") and/or dividend cuts over the past five years. A further nine were also eliminated for having no credit ratings or because they essentially own only generation or transmission assets or their operations are mainly in the natural gas business.

Q3. Are there any issues with the remaining companies in your sample?

A3. Possibly. Entergy Corp, FirstEnergy Corp, Otter Tail Corp, Pepco Holdings Inc, PPL Corp, and SCANA Corp fall into EEI's "Mostly Regulated" category, indicating that between 50 and 80 percent of their assets are subject to regulation. (See Table No. MJV-

2 for a list of the regulated asset categorizations by EEI for each sample company.) A potential problem for the DCF estimates is that sample companies' growth rate forecasts vary substantially company-to-company. For example, Cleco Corp, Empire District Electric Co, and PPL each have a combined growth rate estimate of over 12 percent, while MGE Energy's combined estimate is 2.9 percent and Pinnacle West's is 3.9 percent (see column [6], Table No. MJV-5). Moreover, Bloomberg does not provide a BEst Estimate for Empire District Electric Co and MGE Energy, which means there is only one growth estimate for these companies, and there are only two analysts providing growth estimates for FirstEnergy Corp, IDACORP Inc, and Otter Tail Corp. As such, the growth rates estimates do not support the view that investors are expecting growth rates equal to the single perpetual growth rate assumed in the simple DCF model. Again, this may be an indication that the industry conditions are not fully met for the reliable application of the DCF model. Recall that the DCF model requires stable industry conditions so that dividends, earnings, stock prices etc. are all growing at a constant rate.

Q4. How does the risk of the sample compare to the risk of WPL?

A4. In general, the sample appears to be of similar risk to WPL. The comparison of WPL and the sample is discussed in my direct testimony.

II. MARKET VALUE CAPITAL STRUCTURE, COSTS OF DEBT & COSTS OF PREFERRED EQUITY

Q5. What capital structure information do you require?

A5. For reasons discussed in my testimony and explained in detail in Appendix E, explicit evaluation of the market-value capital structures of the sample companies versus the capital structure used for rate making is vital for a correct interpretation of the market evidence. This requires estimates of the market values of common equity, preferred equity and debt as well as the current market costs of preferred equity and debt.

Q6. How do you calculate the market-value capital structures of the sample companies?

A6. I estimate the capital structure for each company by estimating the market values of common equity, preferred equity and debt from publicly available data. The calculations are in Panels A to R of Table No. MJV-3 for my sample of electric utility companies.

The market value of equity is straightforward: the price per share times the number of shares outstanding. The market value of preferred is set equal to its book value because the portion of the capital structure financed with preferred equity is generally small. The market value of debt is estimated at the book value of debt reported by Bloomberg plus or minus the difference in the estimated fair (market) value and book value of long-term debt as reported in the companies' 10-Ks or annual reports. As described in the following section, I also adjust the long-term debt by including an estimate of the "imputed debt". Imputed debt is an estimate of the present value of debt-like obligations that are either not included in Bloomberg's long-term debt category or are not recorded on the balance sheet.

For purposes of assessing financial risk to common shareholders, I add an adjustment for short-term debt to the debt portion of the capital structure. This adjustment is used only for those companies whose short-term (current) liabilities exceed their short-term (current) assets. I add an amount equal to the minimum of the difference between short-term liabilities and short-term assets or the amount of short-term debt. The reason for this adjustment is to recognize that when current liabilities exceed current assets, a portion of the companies long-term assets are being financed, in effect, by short-term debt.

The market value capital structure is calculated to be consistent with the time period over which the cost of capital is estimated for the sample. The capital structure is determined over the historical period over which the relevant risk positioning parameters were determined and as of the date analysts provide forward looking growth forecasts. Therefore, Table No. MJV-3 reports the market value capital structure at year end for the years ending 2004 - 2008. The output of this table is the market equity-to-value, debt-to-value, and preferred equity-to-value ratios. The overall cost of capital calculation for the

risk positioning estimates the sample relies on the average of the market value capital structure computed for the years 2004 through 2008 as shown in Table No. MJV-4. The results in columns [1]-[3] are used in the DCF model calculations, while columns [4]-[6] are for the risk positioning models.

Q7. How do you estimate the current market cost of preferred equity?

A7. For companies with preferred equity, the cost of preferred equity for each company was set equal to the yield on an index of preferred stock as reported in the Mergent Bond Record as of February 2009 corresponding to the S&P rating of that company's debt. In general, the average amount of preferred equity in the sample companies' capital structures is very small and frequently zero.[3]

Q8. How do you estimate the current market cost of debt?

A8. The market cost of debt for each company in the DCF analysis is the average yield over the last 15 trading days extracted from Bloomberg as of March 2, 2009 for a public utility company bond corresponding to the sample company's current debt rating as classified by S&P. The risk positioning analysis, on the other hand, uses the yield of a utility bond that corresponds to the five-year average debt rating of each company so as to match consistently the horizon of information used by *Value Line* to estimate company betas. The current S&P debt ratings were obtained from Bloomberg.

Bloomberg reports that the average yield on A-rated Public Utility bonds was 6.13 percent and 7.30 percent on BBB-rated Public Utility bonds as of March 2, 2009.[4] (See Panel C of Workpaper #1 to Table No. MJV-11 for the yields on utility bonds and preferred stock by credit rating.) Calculation of the after-tax cost of debt uses the marginal tax rates provided by the companies of 40.14% percent for Wisconsin Power and Light Company.

[3] WPL has preferred equity share slightly over two percent in its capital structure.

[4] The yield on AA-rated utility bonds is calculated as the yield on A-rated utility bonds minus ½ times the spread between the yield on BBB and A rated utility bonds.

III. ESTIMATION OF IMPUTED DEBT

Q9. What is imputed debt?

A9. Imputed debt is a term that refers to the adjustment that credit rating agencies such as S&P make to a company's balance sheet liabilities when determining credit ratios. The idea is to include off-balance sheet liabilities and to adjust some on-balance sheet items in order to achieve a more accurate assessment of the financial risk of the company. Most of the electric utility companies have off-balance sheet obligations that have features similar to the long-term debt. Those include obligations pursuant to power purchase agreements ("*PPA*s"), operating leases, future asset retirement obligations ("*ARO*s"), as well as the excess of company's pension liabilities over the market value of funds collateralizing those liabilities. Although these items are generally not included on a company's balance sheet and/or are not explicitly classified as debt by Bloomberg and the companies' 10-Ks, investors and rating agencies take them into account when assessing the risk and credit profile of the company.

Q10. Why is it important to consider the amount of imputed debt when estimating the cost of equity for WPL?

A10. As discussed in my direct testimony,[5] consideration of the differences in capital structures between the sample companies and WPL is important in making the final determination of the cost of equity capital for the Company because the market value capital structure of a sample company affects its cost of equity. The more debt, the greater the financial risk. Investors are generally aware of off-balance sheet liabilities and consider such obligations when determining the required rate of return for the company. In order to evaluate the results of the sample properly, it is important to consider all forms of financial risk. Therefore, I add my estimate of imputed debt to the market-value capital structure of each sample company to get an adjusted or financial capital structure that more accurately reflects the underlying financial risk of the company.

[5] Direct Testimony, *Section IV.B.*

Q11. Do you make this adjustment in all of the proceedings in which you testify?

A11. No. Wisconsin is one of the few states that explicitly consider imputed debt when setting the allowed ROE for regulated utilities. Implicitly, most other regulators assume that the percentage of imputed debt in the sample and in the regulated entity is about the same so that no adjustment is necessary.

Q12. Please describe the methodology you use to estimate imputed debt.

A12. My debt imputation procedure consists of two primary steps. In the first step, I use WPL's and the sample companies' 10-Ks and follow S&P's methodology in order to arrive at an initial estimate of imputed debt given the available information. Because information available via the 10-Ks is less comprehensive than that available to S&P when it calculates the imputed debt measure,[6] my initial estimates of imputed debt differ to a certain extent from those reported by S&P. Therefore, in my second step I calibrate my first-step estimates to the most recently available imputed debt data reported by S&P for WPL and each of the sample companies.[7]

Q13. Please describe the first step used in the calculation of imputed debt.

A13. First, I reviewed each of the sample companies' 10-Ks for the last five years to obtain data on projected operating lease payments, and payment obligations under PPAs or PPA-like contracts such as energy, fuel and/or capacity purchase contracts. For each of these items, the expected payments are classified by maturity of less than one year, one to three years, four to five years and over five years.[8] I also collect the underfunded status (or, simply, shortfall) of pension and other postretirement benefit plans which is normally reported on the 10-K's as one number rather than being broken down into different maturity categories. The difference between the shortfall of pension liabilities and the rest of the imputed debt components is that others are annual payments that need to be

[6] In particular, S&P has access to proprietary information for each of the sample companies not available to me.

[7] I have access to the end of 2007 data for all companies except Cleco Corp and Consolidated Edison Inc. For Cleco Corp I have the end of 2006 data, while for Consolidated Edison Inc I have the end of 2008 data. In my calibration, for each of the companies I use the first-step estimates from the year corresponding to the year of the available S&P report.

[8] NSTAR and WPL are the only companies for which data is reported separately for each of the next five years.

converted into a present value by an appropriate transformation. Therefore, I calculate the present value of future commitments reported by 10-Ks for each of these categories. Because the sample companies report all future PPA or operating lease payments of "over five years" as a lump sum, I first spread the payments in the "over five years" category over several future periods. The number of periods over which the data is spread for the operating leases and PPAs is determined by dividing the values in the "over five years" category by the average payment amount for years two through five. I then calculate the present values of the adjusted PPAs and operating leases payments for each company. Finally, I sum the present values of the operating leases and the PPA and the pension shortfall amounts to arrive at the total amount of imputed debt to add to the market values of debt and equity.[9]

Q14. Do you include AROs in your imputed debt measure?

A14. No. While I realize that Standard & Poor's takes AROs into account when calculating the imputed debt,[10] identification of the accurate amount for AROs not recoverable in rates from the sample companies 10-Ks is quite involved and would require great deal of subjectivity and judgment call which may introduce non-trivial bias in the imputed debt measure for the sample companies. More specifically, the sample companies utilize different reporting methods for AROs, and some companies may even change the method from one year to another. Further, it is not always clear from the 10-Ks which portion of the reported AROs is recoverable in rates. Because of these factors, I decided not to include this variable in my determination of the imputed debt of the sample companies. To be consistent, I also excluded AROs from WPL's imputed debt calculation.

Q15. How do you calculate the discount rate for each of the companies?

A15. S&P's revised imputed debt methodology now relies on each individual company's embedded cost of debt as the discount rate for its PPA contracts. Because I do not have access to the complete information necessary to calculate the embedded cost of debt for each sample company, I estimate the discount rate for each year by averaging the yields

[9] The pension funding liability shortfall is multiplied by the tax factor for all of the companies. This factor is defined as one minus the Federal corporate tax rate of 35 percent.

[10] *Corporate Ratings Criteria 2008*, Standard & Poor's, pp. 57-59.

on the utility bond index corresponding to the company's rating at the end of the year for the previous five years. In other words, the discount rate for each year is the average of the yields on comparably rated utility bonds over the previous five years. This is intended to reflect the fact that the companies' outstanding debt was issued over a period of time rather than in any one year.

Q16. Do you make any other adjustments when calculating imputed debt?

A16. Yes. When calculating the PPA-related portion of the imputed debt, I first multiply the amounts reported on the company's 10-K by the assumed percentage of fixed payments to capture the portion of the payments that cannot be avoided if the amount of the capacity payment is not specified. Second, I multiply the present value of the capacity payments by the risk factor assumed for a typical electric utility company that is expected to capture the likelihood of the full recovery of the estimated capacity costs in rates. The risk factor measures the strength of the regulatory mechanisms governing cost recovery. The higher is the likelihood of full recovery, the lower will the risk factor. A lower risk factor results in smaller estimate of imputed debt for any contract.

Q17. How are the calculations in your first-step different from the one used by the rating agencies?

A17. To the extent possible, I generally follow the debt imputation method adopted by the Standard & Poor's (S&P).[11] As mentioned above, however, S&P has access to information in addition to what is normally reported by the companies in their annual 10-Ks. S&P's risk factor as well as the details regarding the fixed capacity payment portion under the individual PPAs are not normally reported in the 10-K. In my calculations of PPA-related imputed debt, I use a standard risk factor of 25 percent for all companies in the sample. A risk factor of 25 percent is the lowest risk factor generally awarded absent a legislative mandate for cost recovery. To the extent that a specific sample company operates in a more risky or a less risky regulatory, this assumption may be under or overestimating the amount of imputed debt. Additionally, unless the information in the

[11] S&P RatingsDirect, Credit FAQ: "Imputed Debt Calculation for U.S. Utilities' Power Purchase Agreements", March 30, 2007. S&P Commentary Report, "S&P's Methodology for Imputing Debt for U.S. Utilities' Power Purchase Agreements", May 07, 2007.

10-Ks explicitly suggests otherwise, I assume that the fixed capacity payment is equal to 50 percent of the future annual total payment amounts under the PPA.[12] Because I know that these two assumptions are not accurate for each sample company, I implement a second, calibration step to my debt imputation procedure.

Q18. Please describe the calibration step in your calculation of imputed debt.

A18. For both the operating lease and PPA-based imputed debt estimates, I calculate a scaling factor for the year in which the S&P annual publication reporting the company's imputed debt is available. This is done by dividing the reported imputed debt estimate for each of the two components by the imputed debt estimate I calculated in the first step. I assume that the scaling factor reflects the informational advantage S&P has over my first-step estimation and the 10-K data and that, for each company, this scaling factor will remain constant across all years. Having made that assumption, I arrive at my calibrated numbers by multiplying my first-step estimates by the scaling factor.

Q19. Why don't you simply rely on S&P's published measure of imputed debt for each sample company instead of estimating imputed debt yourself?

A19. For my risk positioning approach, I need S&P's estimates of imputed debt for each of the last five years for WPL and for each of the eighteen companies in my sample. I do not have access to such information at this time, and I am not sure that such information is even available for all sample companies for each year. Additionally, to the extent that S&P has changed its debt imputation method over the last five years, changes in the reported imputed debt numbers from one year to another would not necessarily be indicative of the change in the risk profile of the company.

Q20. How is the imputed debt measure used to arrive at the adjusted capital structure for each of the companies?

A20. I add the imputed debt amount to the market value of on-balance sheet long-term debt to arrive at the total market value of the long-term debt and recalculate the market value

[12] S&P has also modified this assumption in its more recent imputed debt estimation procedures. Capacity payments are assumed to be equal to a capacity payment charge specified by fuel/generator type by area. I do not have the information to duplicate these calculations for all companies.

capital structure by dividing the this sum as well as the market value of preferred and common equity by the total market value of the firm.

Q21. Do you use a similar method to estimate the imputed debt for the Company?

A21. Yes. In order to be consistent with the treatment of the sample companies, I use my two-step debt imputation procedure outlined above, rather than relying on what WPL is reporting in the current proceedings. I make only one exception, namely I calculate the scaling factor in my second-step calibration not separately for operating leases and PPA's but once for the sum of these two components. This has been done to account for the fact that S&P reclassifies some of the PPAs originally reported as operating leases and imputes debt on those under the PPA category (along with other PPAs that have been explicitly classified as such), while to the best of my knowledge, the 10-K for WPL report some of the PPAs under the operating leases category.

Q22. What is the effect of your estimates of imputed debt on the capital structures of WPL and the companies in your sample?

A22. For the sample companies, the five-year average equity share in the capital structures that I use in my risk positioning analysis decreases by about 4.4 percent, as shown in Table B2 below.

Table B2

Changes in Electric Sample 5-Year Average Capital Structures

Capital Structure Without Imputed Debt:		Notes:
Common Equity	**58.4%**	[1]: Average of the sample
Preferred Equity	**0.6%**	[2]: Average of the sample
Debt	**41.0%**	[3]: Average of the sample
Capital Structure With Imputed Debt:		
Common Equity	**54.0%**	[a]: Average of the sample
Preferred Equity	**0.6%**	[b]: Average of the sample
Debt	**45.4%**	[c]: Average of the sample
Changes (With Imputed Debt - Without Imputed Debt):		
Common Equity	**-4.4%**	= [a] - [1].
Preferred Equity	**0.0%**	= [b] - [2].
Debt	**4.5%**	= [c] - [3].

The equity thickness based on the most recently observed financial and accounting data that I use in my DCF models decreases by about 5.5 percent for the same group of companies, as shown in Table B3 below.

Table B3

Changes in Electric Sample DCF Capital Structures

Capital Structure Without Imputed Debt:		Notes:
Common Equity	**52.3%**	[1]: Average of the sample
Preferred Equity	**0.6%**	[2]: Average of the sample
Debt	**47.1%**	[3]: Average of the sample
Capital Structure With Imputed Debt:		
Common Equity	**46.8%**	[a]: Average of the sample
Preferred Equity	**0.6%**	[b]: Average of the sample
Debt	**52.6%**	[c]: Average of the sample
Changes (With Imputed Debt - Without Imputed Debt):		
Common Equity	**-5.5%**	= [a] - [1].
Preferred Equity	**-0.1%**	= [b] - [2].
Debt	**5.5%**	= [c] - [3].

This larger effect is generally caused by a sharp increase in the underfunded status of pension liabilities for most of the companies in the sample as a result of the erosion of the market value of funds supporting these obligations over the course of the last year. The effect of underfunded pension liabilities is less pronounced in the five-year average capital structure. For WPL, inclusion of my estimate of imputed debt decreases the equity share by 5.8 percent. Thus, debt imputation has a slightly larger impact on WPL's capital structure than on the average capital structure of the sample companies.

APPENDIX C

RISK POSITIONING METHODOLOGY AND EMPIRICAL RESULTS

Q1. What is the purpose of this appendix?

A1. This appendix reviews the principles behind the risk positioning methodologies, describes the estimation of the parameters used in the models, and details the cost of capital estimates obtained from these methodologies. This appendix intentionally repeats portions of my direct testimony, because I want the reader to be able to have a full discussion of the issues addressed here, rather than having to continually turn back to the corresponding section of the testimony.

I. EQUITY RISK PREMIUM METHODOLOGY

Q2. How is this section of the appendix organized?

A2. It first reviews the basic nature of the equity risk premium approach. It then discusses the individual components of the model: the benchmark risk premium, the relative risk of the company or line of business in question, the appropriate interest rate, and the combination of these elements in a particular equity risk premium model.

A. THE BASIC EQUITY RISK PREMIUM MODEL

Q3. How does the equity risk premium model work?

A3. The equity risk premium approach estimates the cost of equity as the sum of a current interest rate and a risk premium. (It therefore is sometimes also known as the "risk premium" or the "risk positioning" approach.)

This approach may sometimes be applied informally. For example, an analyst or a commission may check the spread between interest rates and what is believed to be a reasonable estimate of the cost of capital at one time, and then apply that spread to changed interest rates to get a new estimate of the cost of capital at another time.

More formal applications of equity risk premium method implement the second approach to cost of capital estimation. They use information on all securities to identify the security market line (Figure 1 in the body of the testimony) and derive the cost of capital for the individual security based on that security's relative risk. This equity risk premium

approach is widely used and underlies most of the current scholarly research on the nature, determinants and magnitude of the cost of capital.

Q4. How are "more formal applications" put into practice?

A4. The essential benchmarks that determine the security market line are the risk-free interest rate and the premium that a security of average risk commands over the risk-free rate. This premium is commonly referred to as the "market risk premium" ("MRP"), i.e., the excess of the expected return on the average common stock over the risk-free interest rate. In the equity risk premium approach the risk-free interest rate and MRP are common to all securities. A security-specific measure of relative risk (beta) is estimated separately and combined with the MRP to obtain the company-specific risk premium.

In principle, there may be more than one factor affecting the expected stock return, each with its own security-specific measure of relative risk and its own benchmark risk premium. For example, the "arbitrage pricing theory" and other "multi-factor" models have been proposed in the academic literature. These models estimate the cost of capital as the sum of a risk-free rate and several security-specific risk premia. However, none of these alternative models has emerged in practice as "the" improvement to use instead of the original, single-factor model. I use the traditional single-factor model in this testimony.

Accordingly, the required elements in my formal equity risk premium approach are the market risk premium, an objective measure of relative risk, the risk-free rate that corresponds to the measure of the market risk premium, and a specific method to combine these elements into an estimate of the cost of capital.

B. MARKET RISK PREMIUM

Q5. Why is a risk premium necessary?

A5. Experience (e.g., the U.S. market's October Crash of 1987) demonstrates that shareholders, even well diversified shareholders, are exposed to enormous risks. By investing in stocks instead of risk-free Government bills, investors subject themselves not only to the risk of earning a return well below those they expected in any year but also to

the risk that they might lose much of their initial capital. This is why investors demand a risk premium.

I estimate the Capital Asset Pricing Model ("CAPM") using the market risk premium as the risk premium of average risk common stocks over the long-term risk-free rate.

Q6. Please discuss some of the issues involved in selecting the appropriate MRP.

A6. To determine the cost of capital in a regulatory proceeding, the MRP should be used with an estimate of the same interest rate used to calculate the MRP (i.e., the short-term Treasury bill rate or the long-term Government rate). For example, it would be inconsistent to utilize a short-term risk-free with an estimate of the MRP derived from comparisons to long-term interest rates. In addition, the appropriate measure of the MRP should be based upon the arithmetic mean not the geometric mean return.[1] The arithmetic mean is the simple average while the geometric mean is the compound rate of return between two periods.

Q7. How do you estimate the MRP?

A7. There is presently little consensus on "best practice" for estimating the MRP, which does not mean that each approach is equally valid. For example, the latest edition of the leading graduate textbook in corporate finance, after recommending use of the arithmetic average realized excess return on the market for many years (which for a while was noticeably over 9 percent), now reviews the current state of the research and expresses the view that the a range between 5 to 8 percent is reasonable for the U.S.[2,3] At the same time, Dimson, Marsh, and Staunton (2008) estimate that the average arithmetic risk premium of stocks over bonds in the U.S. was 6.5% for the period 1900 to 2007.[4] In a recent proceeding the Surface Transportation Board ("STB") decided to switch from a

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[1] See, for example, Morningstar, *Ibbotson SBBI Valuation Yearbook 2009*, p. 59.

[2] Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, McGraw-Hill, 9th edition, 2008, pp. 173-180.

[3] In past editions, the authors expressed the view that they are "most comfortable" with values toward the upper end of that range, but this language does not appear in the 9th edition. Although Professor Myers still holds this view, this language and other sections were dropped to accommodate a request to reduce the length of the text.

[4] Dimson, Marsh and Staunton, *Global Investment Returns Yearbook 2008*, p. 48.

DCF model to the CAPM model when estimating the cost of equity for U.S. railroads. The STB further decided to rely on the arithmetic risk premium of stocks over long-term bonds as reported in Morningstar / Ibbotson.[5]

My testimony considers both the historical evidence and the results of scholarly studies of the factors that affect the risk premium for average-risk stocks in order to estimate the benchmark risk premium investors currently expect. I consider the historical difference in returns between the Standard and Poor's 500 Index ("S&P 500") and the risk-free rate, recent academic literature on the MRP and the results of recent surveys to estimate the market risk premium.

Q8. Please summarize the recent literature on the MRP and the conclusions you draw from it.

A8. Some recent research based upon U.S. data challenges the conventional wisdom of using the arithmetic average historical excess returns to estimate the MRP. However, after reviewing the issues in the debate, I remain skeptical for several reasons that the market risk premium has declined in the U.S. as much as is claimed in some of the literature.

First, despite eye-catching claims like "equity risk premium as low as three percent,"[6] and "the death of the risk premium,"[7] not all recent research arrives at the same conclusion. In his presidential address to the American Finance Association in 2001, Professor Constantinides seeks to estimate the unconditional equity premium based on average historical stock returns.[8] (Note that this address was based upon evidence just before the major fall in market value.) He adjusts the average returns downward by the change in price-earnings ratio because he assumes no change in valuations in an unconditional state. His estimates for 1926 to 2000 and 1951 to 2000 are 8.0 percent and 6.0 percent, respectively, over the 3-month T-bill rate. In another published study in

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5 *STB Ex Parte No. 664,* Issued January 17, 2008, pp. 8-9.

6 Claus, J. and J. Thomas, (2001), "Equity Risk Premium as Low as Three Percent: Evidence from Analysts' Earnings Forecasts for Domestic and International Stocks," *Journal of Finance* 56:1629-1666.

7 Arnott, R. and R. Ryan, (2001), "The Death of the Risk Premium," *Journal of Portfolio Management* 27(3):61-84.

8 Constantinides, G.M. (2002), "Rational Asset Prices," *Journal of Finance* 57:1567-1591.

2001, Professors Harris and Marston use the DCF method to estimate the market risk premium for the U.S. stocks.[9] Using analysts' forecasts to proxy for investors' expectation, they conclude that over the period 1982-1998 the MRP over the *long-term* risk-free rate is 7.14 percent. As yet another example, the paper by Drs. Ibbotson and Chen (2003) adopts a supply side approach to estimate the forward looking long-term sustainable equity returns and equity risk premium based upon economic fundamentals. Their equity risk premium over the *long-term* risk-free rate is estimated to be 3.97 percent in geometric terms and 5.90 percent on an arithmetic basis. They conclude their paper by stating that their estimate of the equity risk premium is "far closer to the historical premium than being zero or negative."[10]

Second, Professor Ivo Welch surveyed a large group of financial economists in 1998 and 1999. The average of the estimated MRP was 7.1 percent in Prof. Welch's first survey and 6.7 percent in his second survey which was based on a smaller number of individuals. A subsequent survey[11] by Prof. Welch reported only a 5.5 percent MRP.[12] In characterizing these results Prof. Welch notes that "[T]he equity premium consensus forecast of finance and economics professors seems to have dropped during the last 2 to 3 years, a period with low realized equity premia."[13] However, in his recent survey,[14] conducted in December 2007, Prof. Welch finds that the average estimate has increased to about 5.7 percent.

The above quotation from Prof. Welch emphasizes the caution that must attend survey data even from knowledgeable survey participants: the outcome is likely to change

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[9] Robert S. Harris and Felicia C. Marston, "The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts," *Journal of Applied Finance* 11 (1) 6-16, 2001.

[10] Ibbotson, R. and P. Chen (2003), "Stock Market Returns in the Long Run: Participating in the Real Economy," *Financial Analyst Journal*, 59(1):88-98. Cited figures are on p. 97.

[11] Ivo Welch (2000), "Views of Financial Economists on the Equity Premium and on Professional Controversies," *Journal of Business*, 73(4):501-537. The cited figures are in Table 2, p. 514.

[12] Ivo Welch (2001), "The Equity Premium Consensus Forecast Revisited," School of Management at Yale University working paper. The cited figure is in Table 2.

[13] *Ibid*, p. 8.

[14] See Ivo Welch (2008), "The Consensus Estimate for the Equity Premium by Academic Financial Economists in December 2007," School of Management at Yale University working paper. The cited figure is in Table 2.

quickly with changing market circumstances. Regulatory commissions should not, in my opinion, attempt to keep pace with opinions that can change so abruptly. Third, some of the evidence for negative or close to zero market risk premium simply does not make sense. Despite the relatively high valuation levels, stock returns remain much more volatile than Treasury bond returns. I am not aware of any empirical or theoretical evidence showing that investors would rationally hold equities and not expect to earn a positive risk premium for bearing their higher risk.

Fourth, I was unaware of a convincing theory for why the future MRP should have substantially declined, even prior to the economic downturn that started in the 3rd quarter of 2008. At the height of the stock market bubble in the U.S., many claimed that the only way to justify the high stock prices would be if the MRP had declined dramatically,[15] but this argument was heard less frequently after the market declined substantially from its tech bubble high. All else equal, a high valuation ratio such as price-earnings ratio implies a low required rate of return, hence a low MRP. However, even as of early 2008 there was considerable debate about whether the high level of stock prices (despite the burst of the internet bubble from its high in the summer of 2000) represented the transition to a new economy or was simply an "irrational exuberance," which could not be sustained for the long term. If the former case were true, then the MRP might have decreased permanently.

Another common argument for a lower expected MRP has been that the U.S. experienced very remarkable growth in the 20th century that was not anticipated at the start of the century. As a result, the average realized excess return is overestimated meaning the standard method of estimating the MRP would be biased upward. However, one recent study by Professors Jorion and Goetzmann finds, under some simplifying assumptions, that the so-called "survivorship bias" is only 29 basis points.[16] Furthermore, "[I]f

[15] See Robert D. Arnott and Peter L. Bernstein, "What Risk Premium is 'Normal'?," *Financial Analysts Journal* 58:64-85, for an example.

[16] Jorion, P., and W. Goetzmann (1999), "Global Stock Markets in the Twentieth Century," *Journal of Finance* 54:953-980. Dimson, Marsh, and Staunton (2003) make a similar point when they comment on the equity risk premia for 16 countries based on returns between 1900 and 2001: "While the United States and the United Kingdom have indeed performed well, compared to other markets there is no indication that they are hugely out of line." p.4.

investors have overestimated the equity premium over the second half of the last century, Constantinides (2002) argues that 'we now have a bigger puzzle on our hands' Why have investors systematically biased their estimates over such a long horizon?"[17]

To sum up the above, I cite two passages from Profs. Mehra and Prescott's review of the theoretical literature on equity premium puzzle:[18]

> Even if the conditional equity premium given current market conditions is small, and there appears to be general consensus that it is, this in itself does not imply that it was obvious either that the historical premium was too high or that the equity premium has diminished.
>
> In the absence of this [knowledge of the future], and based on what we currently know, we can make the following claim: over the long horizon the equity premium is likely to be similar to what it has been in the past and the returns to investment in equity will continue to substantially dominate that in T-bills for investors with a long planning horizon.

Another line of research was pursued by Steven N. Kaplan and Richard S. Ruback. They estimate the market risk premium in their article, "The Valuation of Cash Flow Forecasts: An Empirical Analysis."[19] Professors Kaplan and Ruback compare published cash flow forecasts for management buyouts and leveraged recapitalization over the 1983 to 1989 period against the actual market values that resulted from these transactions. One of their results is an estimate of the market risk premium over the long-term Treasury bond yield that is based on careful analysis of actual major investment decisions, not realized market returns. Their median estimate is 7.78 percent and their mean estimate is 7.97 percent.[20] This is considerably higher than my initial estimate of 6.5 percent.

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[17] Mehra, R., and E.C. Prescott (2003), "The Equity Premium in Retrospect," in *Handbook of the Economics of Finance*, Edited by G.M. Constantinides, M. Harris and R. Stulz, Elsevier B.V, p. 926

[18] *Ibid*, p. 926.

[19] *Journal of Finance*, 50, September 1995, pp. 1059-1093.

[20] *Ibid*, p. 1082.

Q9. In addition to the scholarly articles and survey evidence you discussed in Section I of your Direct Testimony, what other evidence do you consider to estimate the MRP?

A9. I also consider the long-run realized equity premia reported in Morningstar's *Ibbotson SBBI Valuation Yearbook 2009*. The data provided cover the period 1926 through 2008. The results are discussed below.

Q10. What is the "long-run realized risk premium" in the U.S.?

A10. From 1926 to 2008, the full period reported, Morningstar's data show that the average premium of stocks over Treasury bills is 7.9 percent. I also examine the "post-War" period. The risk premium for 1947-2008 is 7.6 percent.[21] (I exclude 1946 because its economic statistics are heavily influenced by the War years; e.g., the end of price controls yielded an inflation rate of 18 percent. It is not really a "post-War" year, from an economic viewpoint.) These averages often change slightly when another year of data is added to the Ibbotson series. The average premium of stocks over the income returns on long-term Government bonds is 6.5 percent for the 1926 to 2008 period and 6.2 for the 1947 to 2008 period.

Prior to the economic crisis that started in the second half of 2008, there had been a great deal of academic research on the MRP. This research put practitioners in a dilemma: there was nothing close to a consensus about how the MRP should be estimated, but a general agreement in the academic community seemed to be emerging that the old approach of using the average realized return over long periods gave too high an answer. Realized returns have now fallen, but it is highly likely that the MRP currently exceeds the average of realized returns because of increased risk aversion among investors as well as other considerations discussed below and in my direct testimony.

Q11. Do you have any additional comments on your choice of the MRP?

A11. Yes. All of the debate discussed above has taken place before the current financial turmoil, ensuing economic downturn, and highly uncertain timing of recovery. As discussed at length in my direct testimony, the recent events in the financial markets cast

[21] Morningstar, *Ibbotson SBBI Valuation Yearbook 2009*, Appendix A, Tables A-1 and A-3.

serious doubt on the claim that the MRP may have declined. Moreover, as discussed therein, there are strong reasons to expect that the current level of the MRP may in fact be significantly higher than what has been reported traditionally and higher than the base level MRP that I use in my testimony.

Q12. Have any of the prior academic studies shed any light on why the MRP would be higher under current circumstances?

A12. Yes. First and foremost, the standard consumption-based asset pricing theory suggests that, all else equal, higher risk aversion implies higher MRP.[22] To the extent that there has been an adverse shock to risk aversion of investors, the MRP is likely to have increased.

Second, the academic literature contains studies of the impact of recessions on investors' attitude towards risk. These studies find that the risk aversion and hence the risk premium required to hold equity rather than debt increases in economic downturns. Several articles suggest that the market risk premium is higher during times of recession. Constantinides (2008) studies a classical utility model where consumers are risk averse and also summarizes some of the empirical literature. Constantinides draws from empirical evidence that shows that consumers become risk averse in times of economic recession or downturn, and equity investments accentuate this risk.[23] (Increased risk aversion leads to a higher expected return for investors before they will invest.) Specifically, equities are pro-cyclical and decline in value when the probability of a job loss increases; thus, they fail to hedge against income shocks that are more likely to occur during recessions.[24] Consequently, investors require an added risk premium to hold equities during economic downturns:

> In economic recessions, investors are exposed to the double hazard of stock market losses and job loss. Investment in equities not only fails to

[22] See, for example, Mehra and Prescott (1985).

[23] Constantinides, G. M., "Understanding the equity risk premium puzzle". In R. Mehra, ed., *Handbook of the Equity Risk Premium*, 2008, Elsevier, Amsterdam.

[24] Constantinides, G.M., and D. Duffie (1996), "Asset Pricing with Heterogeneous Consumers", *Journal of Political Economy*, Vol. 104 (2): 219-240.

> hedge the risk of job loss but also accentuates its implications. Investors require a hefty equity premium in order to be induced to hold equities. This is the argument that I formalize below and address the predictability of asset returns and their unconditional moments.[25]

And

> The first implication of the theory is an explanation of the counter-cyclical behavior of the equity risk premium: the risk premium is highest in a recession because the stock is a poor hedge against the uninsurable income shocks, such as job loss, that are more likely to arrive during a recession.
>
> The second implication is an explanation of the unconditional equity premium puzzle: even though per capita consumption growth is poorly correlated with stocks returns, investors require a hefty premium to hold stocks over short-term bonds because stocks perform poorly in recessions, when the investor is most likely to be laid off.[26]

Empirically, several authors have found that market volatility and the market risk premium are positively related. For example, Kim, Morley and Nelson (2004)[27] find that

> When the effects of volatility feedback are fully taken into account, the empirical evidence supports a significant positive relationship between stock market volatility and the equity premium.[28]

Additionally, in their article that won the annual Smith-Breeden Paper Award given by the American Finance Association and the *Journal of Finance*, Bansal and Yaron (2004) demonstrate that economic uncertainty plays an important role in explaining the MRP.[29] In particular, they show that uncertainty is priced in the market. In their model, higher uncertainty (measured in their paper by volatility of consumption) leads to higher conditional MRP. Another implication of the analysis in Bansal and Yaron (2004) is that even the unconditional MRP can increase if any of the following materialize: (i)

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[25] G.M. Constantinides (2008), "Understanding the equity risk premium puzzle." In R. Mehra, ed., *Handbook of the Equity Risk Premium*. Elsevier, Amsterdam.

[26] *Ibid*, p. 353.

[27] C-J. Kim, J.C. Morley and C.R. Nelson (2004), "Is There a Positive Relationship Between Stock Market Volatility and the Equity Premium," *Journal of Money, Credit and Banking*, Vol. 36.

[28] *Ibid*. p. 357. The authors rely on a statistical (Markov-switching) model of the ARCH type and data for the period 1926 to 2000 for their analysis.

[29] Bansal, R., and A. Yaron (2004), "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles", *Journal of Finance*, Vol. 59 (4): 1481-1509.

investors become more risk-averse; (ii) shocks to economic uncertainty become more pronounced; (iii) periods of high economic uncertainty become longer lasting. To the extent that risk aversion has experienced an adverse shock, the MRP must have increased. Furthermore, perception of more severe shocks to economic uncertainty and slower decay of higher uncertainty periods are likely to cause an increase in the MRP even in the absence of any shock to the risk aversion parameter.

Gabaix (2009) provides an alternative explanation for a time-varying risk premium in his newly circulated working paper.[30] The argument is that the MRP is linked to the fear of rare but large "disasters". The time-varying nature of the severity of those disasters leads to time-varying risk premium. To the extent we are experiencing an economic downturn of a magnitude not seen since the times of the Great Depression, the argument presented in this paper is supportive of the idea that the MRP is currently higher than it would be under more normal conditions.

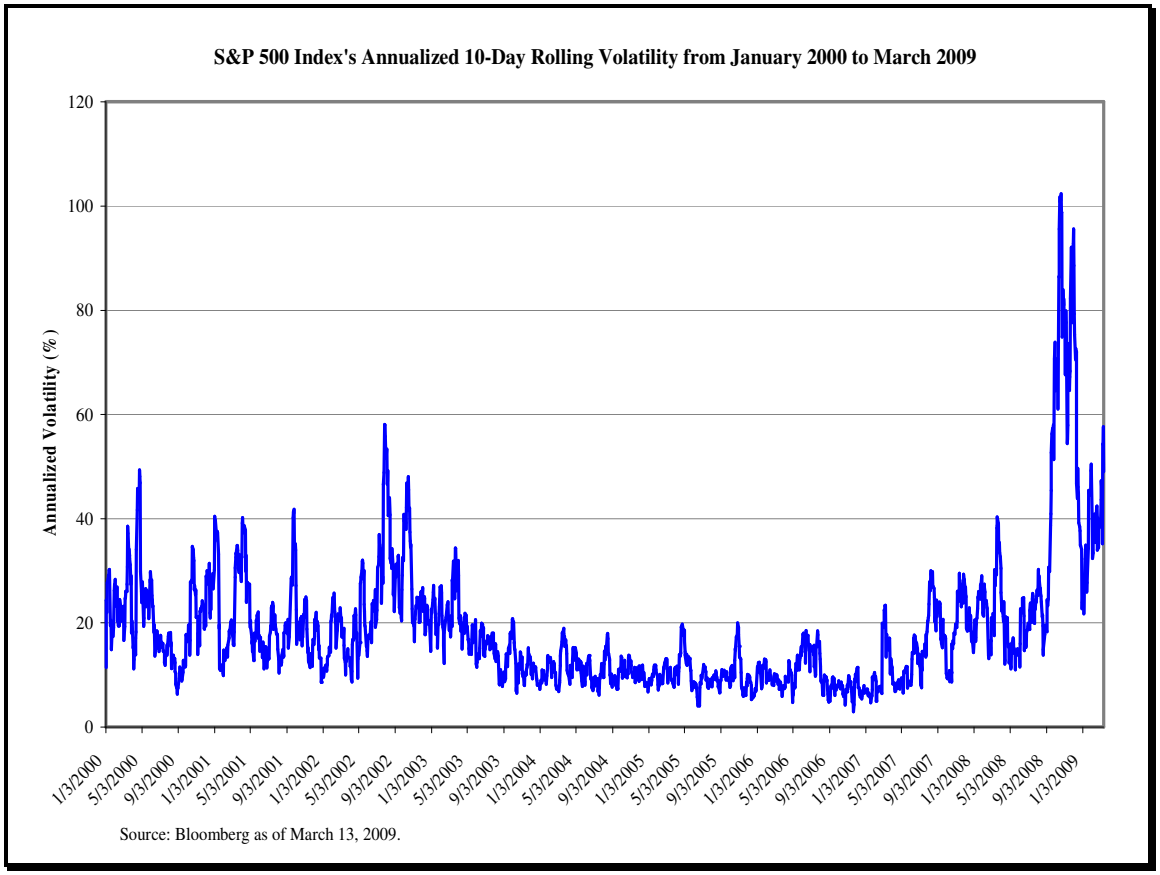
The facts that financial markets are in turmoil and stock market volatility has increased dramatically mean that equity investors face increased uncertainty. Increased uncertainty leads investors to seek lower risk investments or to demand a higher expected rate of return before they are willing to invest their money. In part, this is an explanation of why market prices have fallen. The financial market distress means that the current MRP is *higher* than it would otherwise be. Dimson, Marsh, and Staunton (2008) appear to agree as they note

> Although credit spreads widened, credit fundamentals as measured by low default rates remained at historically strong levels. This may indicate higher defaults to come, an increase in risk aversion, a bigger premium for liquidity, or all three.[31]

As shown in Figure 3 in my direct testimony (which is reproduced below), the volatility in the U.S. stock market spiked to 3 to 4 times the normal level of about 20 percent in September-October and remains at more than twice its normal level.

[30] Gabaix, X. (2009), "Variable Rare Disasters: An Exactly Solved Framework for Ten Puzzles in Macro Finance", *Working Paper*, *New York University Stern School of Business* and *NBER*.

[31] Elroy Dimson, Paul Marsh, and Mike Staunton, 2008, *Global Investment Returns Yearbook 2008*, p. 25.



As investors' risk aversion also increases during times of financial distress, there can be little doubt that the MRP is currently higher than in the recent past.

Q13. What is your conclusion regarding the MRP?

A13. Estimation of the MRP remains controversial. There is no consensus on its value or even how to estimate it. Given a careful review of all of the information, I estimate the risk premium for average risk stocks to be 6.5 percent over long-term Government bonds prior to the crisis in the U.S. economy. At this time, an additional upward adjustment of at least 1.5 percent is warranted in recognition of the unsettled condition of the capital markets. The increase in the MRP is likely to be greater than the 1.5 percent that I use in this proceeding. Table 8 in the direct testimony shows the sensitivity of the cost of equity implied by my ATWACC approach to additional changes in the level of the (long-term) MRP.

C. RELATIVE RISK

Q14. How do you measure relative risk?

A14. The risk measure I examine is the "beta" of the stocks in question. Beta is a measure of the "systematic" risk of a stock — the extent to which a stock's value fluctuates more or less than average when the market fluctuates. It is the most commonly used measure of risk in capital market theories.

Q15. Please explain beta in more detail.

A15. The basic idea behind beta is that risks that cannot be diversified away in large portfolios matter more than those that can be eliminated by diversification. Beta is a measure of the risks that *cannot* be eliminated by diversification.

Diversification is a vital concept in the study of risk and return. (Harry Markowitz won a Nobel Prize for work showing just how important it was.) Over the long run, the rate of return on the stock market has a very high standard deviation, on the order of 15 - 20 percent per year. But many individual stocks have much higher standard deviations than this. The stock market's standard deviation is "only" about 15 - 20 percent because when stocks are combined into portfolios, some of the risk of individual stocks is eliminated by diversification. Some stocks go up when others go down, and the average portfolio return — positive or negative — is usually less extreme than that of individual stocks within it.

In the limiting case, if the returns on individual stocks were completely uncorrelated with one another, the formation of a large portfolio of such stocks would eliminate risk entirely. That is, the market's long-run standard deviation would be not 15-20 percent per year, but virtually zero.

The fact that the market's actual annual standard deviation is so large means that, in practice, the returns on stocks are correlated with one another, and to a material degree. The reason is that many factors that make a particular stock go up or down also affect other stocks. Examples include the state of the economy, the balance of trade, and inflation. Thus some risk is "non-diversifiable". Single-factor equity risk premium models derive conditions in which all of these factors can be considered simultaneously,

through their impact on the market portfolio. Other models derive somewhat less restrictive conditions under which several of them might be individually relevant.

Again, the basic idea behind all of these models is that risks that cannot be diversified away in large portfolios matter more than those that can be eliminated by diversification, because there are a large number of large portfolios whose managers actively seek the best risk-reward tradeoffs available. Of course, undiversified investors would like to get a premium for bearing diversifiable risk, but they cannot.

Q16. Why not?

A16. Well-diversified investors compete away any premium rates of return for diversifiable risk. Suppose a stock were priced especially low because it had especially high diversifiable risk. Then it would seem to be a bargain to well diversified investors. For example, suppose an industry is subject to active competition, so there is a large risk of loss of market share. Investors who held a portfolio of all companies in the industry would be immune to this risk, because the loss on one company's stock would be offset by a gain on another's stock. (Of course, the competition might make the whole industry more vulnerable to the business cycle, but the issue here is the diversifiable risk of shifts in market share among firms.)

If the shares were priced especially low because of the risk of a shift in market shares, investors who could hold shares of the whole industry would snap them up. Their buying would drive up the stocks' prices until the premium rates of return for diversifiable risk were eliminated. Since all investors pay the same price, even those who are not diversified can expect no premium for bearing diversifiable risk.

Of course, substantial non–diversifiable risk remains, as the October Crash of 1987 demonstrates. Even an investor who held a portfolio of all traded stocks could not diversify against that type of risk. Sensitivity to such market–wide movements is what beta measures. That type of sensitivity, whether considered in a single- or multi-factor model, determines the risk premium in the cost of equity.

Q17. What does a particular value of beta signify?

A17. By definition, a stock with a beta equal to 1.0 has average non-diversifiable risk: it goes up or down by 10 percent on average when the market goes up or down by 10 percent. Stocks with betas above 1.0 exaggerate the swings in the market: stocks with betas of 2.0 tend to fall 20 percent when the market falls 10 percent, for example. Stocks with betas below 1.0 are less volatile than the market. A stock with a beta of 0.5 will tend to rise 5 percent when the market rises 10 percent.

Q18. How is beta measured?

A18. The usual approach to calculating beta is a statistical comparison of the sensitivity of a stock's (or a portfolio's) return to the market's return. Many investment services report betas, including Bloomberg and the *Value Line Investment Survey*. Betas are not always calculated the same way, and therefore must be used with a degree of caution, but the basic point that a high beta indicates a risky stock has long been widely accepted by both financial theorists and investment professionals.

Q19. Are there circumstances when the "usual approach to calculating beta" should not be used?

A19. There are at least two cases where the standard estimate of beta should be viewed skeptically.

First, companies in serious financial distress seem to "decouple" from their normal sensitivity to the stock market. The stock prices of financially distressed companies tend to change based more on individual news about their particular circumstances than upon overall market movements. Thus, a risky stock could have a low estimated beta if the company was in financial distress. Other circumstances that may cause a company's stock to decouple include an industry restructuring or major changes in a company's supply or output markets.

Second, similar circumstances seem to arise for companies "in play" during a merger or acquisition. Once again, the individual information about the progress of the proposed takeover is so much more important for that stock than day-to-day market fluctuations that, in practice, beta estimates for such companies seem to be too low.

Q20. How reliable is beta as a risk measure?

A20. Scholarly studies have long confirmed the importance of beta for a stock's required rate of return. It is widely regarded as the best single risk measure available. The merits of beta seemed to have been challenged by widely publicized work by Professors Eugene F. Fama and Kenneth R. French.[32] However, despite the early press reports of their work as signifying that "beta is dead," it turns out that beta is still a potentially important explanatory factor (albeit one of several) in their work. Thus, beta remains alive and well as the best single measure of relative risk.

D. INTEREST RATE ESTIMATE

Q21. What interest rates do your procedures require?

A21. Modern capital market theories of risk and return use the short-term risk-free rate of return as the starting benchmark. I believe that the use of the results based on the short-term risk-free rate is not reasonable at the moment because of short-term rates higher dependence on Federal Reserve's monetary policy. Therefore, my measure of the MRP incorporates the excess of the expected return on the market over the long-term U.S. Government bond rate. Accordingly, implementation of my procedures requires use of an estimate of the long-term Government bond rate.

E. COST OF CAPITAL MODELS

Q22. How do you combine the above components into an estimate of the cost of capital?

A22. By far the most widely used approach to estimation of the cost of capital is the "Capital Asset Pricing Model," and I do calculate CAPM estimates. However, the CAPM is only one equity risk premium approach technique, and I also use another.

Q23. Please start with the CAPM, by describing the model.

A23. As noted above, the modern models of capital market equilibrium express the cost of equity as the sum of a risk-free rate and a risk premium. The CAPM is the longest-standing and most widely used of these theories. The CAPM states that the cost of

[32] See for example, "The Capital Asset Pricing Model: Theory and Evidence", Eugene F. Fama and Kenneth R. French, *Journal of Economic Perspectives*, Volume 18, Summer 2004, pp. 25-46.

capital for investment *s* (e.g., a particular common stock) is given by the following equation:

$$k_s = r_f + \beta_s \times MRP \qquad \textbf{(C-1)}$$

where k_s is the cost of capital for investment *s*; r_f is the risk-free rate, β_s is the beta risk measure for the investment *s*; and *MRP* is the market risk premium.

The CAPM relies on the empirical fact that investors price risky securities to offer a higher expected rate of return than safe securities do. It says that the security market line starts at the risk-free interest rate (that is, that the return on a zero-risk security, the y-axis intercept in Figure 1 in the body of my testimony, equals the risk-free interest rate). Further, it says that the risk premium over the risk-free rate equals the product of beta and the risk premium on a value-weighted portfolio of all investments, which by definition has average risk.

Q24. What other equity risk premium approach model do you use?

A24. Empirical research has long shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premia than predicted by the CAPM and high-beta stocks tend to have lower risk premia than predicted. A number of variations on the original CAPM theory have been proposed to explain this finding. The difference between the CAPM and the type of relationship identified in the empirical studies is depicted in Figure MJV-C1.

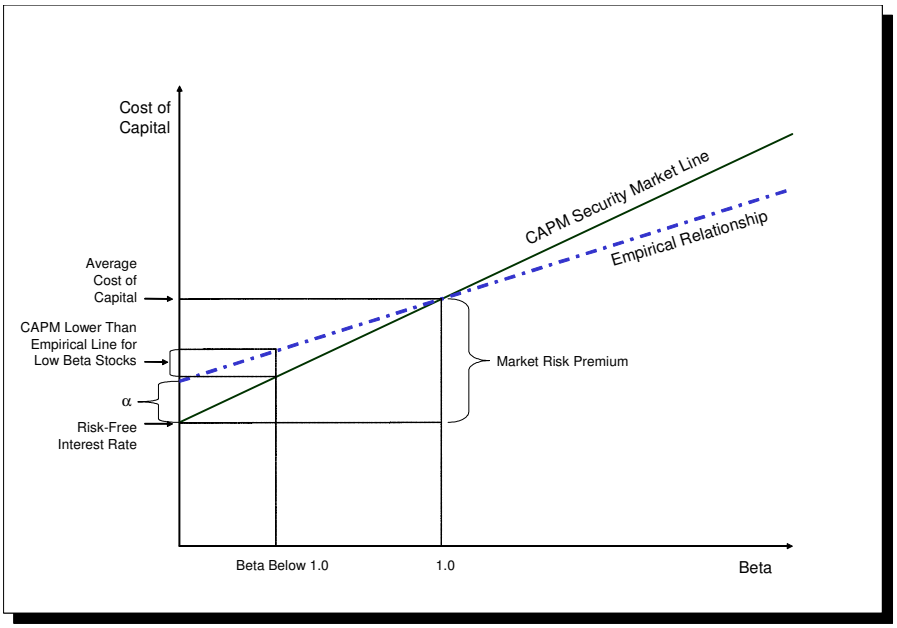


Figure MJV-C1: The Empirical Security Market Line

The second model makes use of these empirical findings. It estimates the cost of capital with the equation,

$$k_s = r_f + \alpha + \beta_s \times (MRP - \alpha) \qquad \textbf{(C-2)}$$

where α is the "alpha" of the risk-return line, a constant, and the other symbols are defined as above. I label this model the Empirical Capital Asset Pricing Model, or "ECAPM." When I use the short-term risk-free rate models, I set alpha equal to 1, 2, and 3 percent which are values somewhat lower than that estimated empirically. For low-beta stocks such as regulated utilities, the use of a lower value for alpha leads to a lower estimate of the cost of capital. For the long-term risk-free rate models, I set alpha equal to both 0.5 percent and 1.5 percent, but I rely more heavily on the 0.5 percent results. The use of a long-term risk-free rate incorporates some of the desired effect of using the ECAPM. That is, the long-term risk-free rate version of the Security Market Line has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is likely that I do not need to make the same degree adjustment when I use the long-term risk-free rate. A summary of the empirical evidence on the magnitude of alpha is provided in Table No. MJV-C1 below.

II. EMPIRICAL EQUITY RISK PREMIUM RESULTS

Q25. How is this part of the appendix organized?

A25. This section presents the full details of my equity risk premium approach analyses, which are summarized in the body of my testimony. Details behind the estimates of the long-term risk-free interest rate are discussed. Next, the beta estimates, and the estimates of the MRP I use in the models are addressed. Finally, this section reports the CAPM and ECAPM results for the sample's costs of equity, and then describes the results of adjusting for differences between the benchmark sample and WPL's regulatory capital structures (both adjusted for the imputed debt).

A. RISK-FREE INTEREST RATE

Q26. How do you obtain estimates of the risk-free interest rates over the period the utility rates set here are to be in effect?

A26. I obtain these rates using data provided by Bloomberg. In particular, I use their reported government debt yields from the "constant maturity series". This information is displayed Table No. MJV-9.

Q27. What values do you use for the (long-term) risk-free interest rate?

A27. Under normal circumstances, I would use a value of 3.8 percent for the long-term risk-free interest rate as the benchmark interest rate in the equity risk premium analyses as shown in Table No. MJV-9. These values are derived by using historical yield curve data to find the long-run average implied term premia on government securities, and combining these with recent yield curve data. Details of their calculation can be found in the Workpapers to Table No. MJV-9.

However, economic conditions are anything but normal at the moment. The flight to safety has resulted in an increase the yield spreads between utility bonds and government bonds to extraordinarily high levels by historical standards. This clearly calls for an upward adjustment of the risk free interest rate. The procedure by which I adjust the risk free interest rate is described in my direct testimony.

B. BETAS AND THE MARKET RISK PREMIUM

1. Beta Estimation Procedures

Q28. How do you estimate beta?

A28. I use beta estimates reported in the *Value Line* for the sample companies. The estimates range from 0.55 to 0.90 for the sample of the eighteen electric utility companies with the average of 0.71.

2. Market Risk Premium Estimation

Q29. Given all of the evidence, what MRP do you use in your analysis?

A29. Based on the collective evidence prior to the financial crisis and on the likely effect of the economic turmoil that started in 2008, I use a baseline MRP of 8.0 percent (equal to the pre-crisis 6.5 percent plus 1.5 percent adjustment). I believe that a higher MRP is likely to persist for the years to come, and the actual level of the MRP today may, in fact, be larger (possibly, even significantly larger) than I am using.

C. COST OF CAPITAL ESTIMATES

Q30. Based on these data, what are the values you calculate for the overall cost of capital and the corresponding cost of equity for the electric utility sample?

A30. Table No. MJV-10 presents the cost of equity results using the equity risk positioning methods under the assumption of the long-term risk-free rate equal to 4.675 percent (including the 0.875 percent yield spread adjustment). Table No. MJV-11, Panels A to C use the estimated ROEs from Table No. MJV-10 and the market value capital structures to calculate the overall cost of capital (ATWACC) for the various equity risk positioning methods. Panel A reports the ATWACC estimates using the CAPM results for the long-term risk-free rate, while Panels B and C report these estimates for the ECAPM cost of equity results using ECAPM parameters of 0.5 and 1.5 percent, respectively. In each panel, column [8] reports the overall after-tax weighted-average cost of capital for each company. The last row of each panel reports the sample averages.

Q31. What does the electric market data imply about the sample's cost of equity at the proposed 49.1 percent equity ratio for WPL?

A31. The sample average ATWACC from each panel of Table No. MJV-11 is reproduced in column [1] of Table No. MJV-12, which then reports the cost of equity for each of the risk positioning methods that is consistent with the sample information and the financial capital structure of WPL which includes my estimate of WPL's imputed debt consistent with my methodology used to estimate imputed debt for the sample companies. The sample average ATWACCs and corresponding costs of equity at a 49.1 percent equity ratio are displayed in Table 7 of my testimony.

Q32. What are the implications of the risk positioning results for WPL's estimated cost of equity?

I discuss the implications of the risk positioning results in the main body of my testimony. There I also provide sensitivity results for different combinations of adjustment to the baseline MRP and adjustment for the yield spread.

Table MJV-C1

EMPIRICAL EVIDENCE ON THE ALPHA FACTOR IN ECAPM*

AUTHOR	RANGE OF ALPHA	PERIOD RELIED UPON
Black (1993)[1]	1% for betas 0 to 0.80	1931-1991
Black, Jensen and Scholes (1972)[2]	4.31%	1931-1965
Fama and McBeth (1972)	5.76%	1935-1968
Fama and French (1992)[3]	7.32%	1941-1990
Fama and French (2004)[4]	N/A	
Litzenberger and Ramaswamy (1979)[5]	5.32%	1936-1977
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 3.91%	1926-1978
Pettengill, Sundaram and Mathur (1995)[6]	4.6%	1936-1990

*The figures reported in this table are for the longest estimation period available and, when applicable, use the authors' recommended estimation technique. Many of the articles cited also estimate alpha for sub-periods and those alphas may vary.

[1]Black estimates alpha in a one step procedure rather than in an un-biased two-step procedure.

[2]Estimate a negative alpha for the subperiod 1931-39 which contain the depression years 1931-33 and 1937-39.

[3]Calculated using Ibbotson's data for the 30-day treasury yield.

[4]The article does not provide a specific estimate of alpha; however, it supports the general finding that the CAPM underestimates returns for low-beta stocks and overestimates returns for high-beta stocks.

[5]Relies on Lizenberger and Ramaswamy's before-tax estimation results. Comparable after-tax alpha estimate is 4.4%.

[6]Pettengill, Sundaram and Mathur rely on total returns for the period 1936 through 1990 and use 90-day treasuries. The 4.6% figure is calculated using auction averages 90-day treasuries back to 1941 as no other series were found this far back.

Sources:

Black, Fischer. 1993. Beta and Return. *The Journal of Portfolio Management* 20 (Fall): 8-18.

Black, F., Michael C. Jensen, and Myron Scholes. 1972. The Capital Asset Pricing Model: Some Empirical Tests, from Studies in the theory of Capital Markets. In *Studies in the Theory of Capital Markets*, edited by Michael C. Jensen, 79-121. New York: Praeger.

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Litzenberger, Robert H. and Krishna Ramaswamy. 1979. The Effect of Personal Taxes and Dividends on Capital Asset Prices, Theory and Empirical Evidence. *Journal of Financial Economics* XX (June): 163-195.

Litzenberger, Robert H. and Krishna Ramaswamy and Howard Sosin. 1980. On the CAPM Approach to Estimation of a Public Utility's Cost of Equity Capital. *The Journal of Finance* 35 (2): 369-387.

Pettengill, Glenn N., Sridhar Sundaram and Ike Mathur. 1995. The Conditional Relation between Beta and Returns. *Journal of Financial and Quantitative Analysis* 30 (1): 101-116.

Appendix D: DISCOUNTED CASH FLOW METHODOLOGY: DETAILED PRINCIPLES AND RESULTS

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Appendix D: DISCOUNTED CASH FLOW METHODOLOGY: DETAILED PRINCIPLES AND RESULTS

Q1. What is the purpose of this appendix?

A1. This appendix reviews the principles behind the discounted cash flow or "DCF" methodology and the details of the cost of capital estimates obtained from this methodology.

I. DISCOUNTED CASH FLOW METHODOLOGY PRINCIPLES

Q2. How is this section of the appendix organized?

A2. The first part discusses the general principles that underlie the DCF approach. The second portion describes the strengths and weaknesses of the DCF model and why it is generally less reliable for estimating the cost of capital for the sample companies than the risk positioning method discussed in Appendix C.

A. SIMPLE AND MULTI-STAGE DISCOUNTED CASH FLOW MODELS

Q3. Please summarize the DCF model.

A3. The DCF model takes the first approach to cost of capital estimation discussed with Figure 1 in Section II-A of my direct testimony. That is, it attempts to measure the cost of equity in one step. The method assumes that the market price of a stock is equal to the present value of the dividends that its owners expect to receive. The method also assumes that this present value can be calculated by the standard formula for the present value of a cash flow stream:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_T}{(1+k)^T} \qquad \textbf{(D-1)}$$

where "P" is the market price of the stock; "D_i" is the dividend cash flow expected at the end of period i; "k" is the cost of capital; and "T" is the last period in which a dividend cash flow is to be received. The formula just says that the stock price is equal to the sum

of the expected future dividends, each discounted for the time and risk between now and the time the dividend is expected to be received.

Most DCF applications go even further, and make very strong (*i.e.*, unrealistic) assumptions that yield a simplification of the standard formula, which then can be rearranged to estimate the cost of capital. Specifically, if investors expect a dividend stream that will grow forever at a steady rate, the market price of the stock will be given by a very simple formula,

$$P = \frac{D_1}{(k - g)} \qquad \textbf{(D-2)}$$

where "D_1" is the dividend expected at the end of the first period, "g" is the perpetual growth rate, and "P" and "k" are the market price and the cost of capital, as before.

Equation D-2 is a simplified version of Equation D-1 that can be solved to yield the well known "DCF formula" for the cost of capital:

$$k = \frac{D_1}{P} + g = \frac{D_O \times (1 + g)}{P} + g \qquad \textbf{(D-3)}$$

where "D_0" is the current dividend, which investors expect to increase at rate g by the end of the next period, and the other symbols are defined as before. Equation D-3 says that if Equation D-2 holds, the cost of capital equals the expected dividend yield plus the (perpetual) expected future growth rate of dividends. I refer to this as the simple DCF model. Of course, the "simple" model is simple because it relies on very strong (*i.e.*, very unrealistic) assumptions.

Q4. Are there other versions of the DCF models besides the "simple" one?

A4. Yes. If Equation D-2 does not hold, sometimes other variations of the general present value formula, Equation D-1, can be used to solve for k in ways that differ from Equation D-3. For example, if there is reason to believe that investors do *not* expect a steady growth rate forever, but rather have different growth rate forecasts in the near term (e.g.,

over the next five or ten years), these forecasts can be used to specify the early dividends in Equation D-1. Once the near-term dividends are specified, Equation D-2 can be used to specify the share price value at the end of the near-term (e.g., at the end of five or ten years), and the resulting cash flow stream can be solved for the cost of capital using Equation D-1.

More formally, the "multi-stage" DCF approach solves the following equation for k:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_T + P_{TERM}}{(1+k)^T} \qquad \textbf{(D-4)}$$

The terminal price, P_{TERM} is estimated as

$$P_{TERM} = \frac{D_{T-1}}{(k - g_{LR})} \qquad \textbf{(D-5)}$$

where T is the last of the periods in which a near term dividend forecast is made and g_{LR} is the long-run growth rate. Thus, Equation D-4 defers adoption of the very strong perpetual growth assumptions that underlie Equation D-2 — and hence the simple DCF formula, Equation D-3 — for as long as possible, and instead relies on near term knowledge to improve the estimate of k. I examine both simple and multistage DCF results below.

Q5. What are the merits of the DCF model?

A5. The DCF approach is conceptually sound if its assumptions are met but can run into difficulty in practice because those assumptions are so strong, and hence so unlikely to correspond to reality. Two conditions are well-known to be necessary for the DCF approach to yield a reliable estimate of the cost of capital: the variant of the present value formula, Equation D-1, that is used must actually match the variations in investor expectations for the dividend growth path; and the growth rate(s) used in that formula must match current investor expectations. Less frequently noted conditions may also create problems.

The DCF model assumes that investors expect the cost of capital to be the same in all future years. Investors may not expect the cost of capital to be the same, which can bias the DCF estimate of the cost of capital in either direction.

The DCF model only works for companies for which the standard present value formula works. The standard formula does *not* work for companies that operate in industries or markets that are unstable or for options (*e.g.*, puts and calls on common stocks), and so it will not work for companies whose stocks behave as options do. Option-pricing effects will be important for companies in financial distress, for example, which implies the DCF model will *understate* their cost of capital, all else equal.

In recent years even the most basic DCF assumption, that the market price of a stock in the absence of growth options is given by the standard present value formula (*i.e.*, by Equation D-1 above), has been called into question by a literature on market volatility.[1] In any case, it is still too early to throw out the standard formula, if for no other reasons than that the evidence is still controversial and no one has offered a good replacement. But the evidence suggests that it must be viewed with more caution than financial analysts have traditionally applied. Simple models of stock prices may not be consistent with the available evidence on stock market volatility.

Q6. Normally DCF debates center on the right growth rate. What principles underlie that choice?

A6. Finding the right growth rate(s) is indeed the usual "hard part" of a DCF application. The original approach to estimation of *g* relied on average historical growth rates in

[1] See for example, Robert J. Shiller (1981), "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?," *The American Economic Review*, Vol. 71, No. 3, pp. 421-436. John Y. Campbell and Robert J. Shiller (1988), "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *The Review of Financial Studies*, Vol. 1, No. 3, pp. 195-228. Lucy F. Ackert and Brian F. Smith (1993), "Stock Price Volatility, Ordinary Dividends, and Other Cash Flows to Shareholders," *Journal of Finance*, Vol. 48, No. 1, pp. 1147-1160. Eugene F. Fama and Kenneth R. French (2001), "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?," *Journal of Financial Economics*, Vol. 60, pp. 3-43. Borja Larrain and Motohiro Yogo (2005), "Does Firm Value Move Too Much to be Justified by Subsequent Changes in Cash Flow?," Federal Reserve Bank of Boston, *Working Paper*, No. 05-18.

observable variables, such as dividends or earnings, or on the "sustainable growth" approach, which estimates *g* as the average book rate of return times the fraction of earnings retained within the firm. But it is highly unlikely that historical averages over periods with widely varying rates of inflation, interest rates and costs of capital, such as in the relatively recent past, will equal current growth rate expectations.

A better approach is to use the growth rates currently expected by investment analysts, if an adequate sample of such rates is available. If this approach is feasible and if the person estimating the cost of capital is able to select the appropriate version of the DCF formula, the DCF method should yield a reasonable estimate of the cost of capital for companies not in financial distress and without material option-pricing effects (always subject to recent concerns about the applicability of the basic present value formula to stock prices as well as issues of optimism bias). However, in order for the DCF approach to work, the basic stable-growth assumption must become reasonable and the underlying stable-growth rate must become determinable *within the period for which forecasts are available*.

Q7. What is the so called "optimism bias" in the earnings growth rate forecasts of security analysts and what is its effect on the DCF analysis?

A7. Optimism bias is related to the observed tendency for analysts to forecast earnings growth rates that are higher than are actually achieved. This tendency to over estimate growth rates is perhaps related to incentives faced by analysts that provide rewards not strictly based upon the accuracy of the forecasts. To the extent optimism bias is present in the analysts' earnings forecasts, the cost of capital estimates from the DCF model would be too high.

Q8. Does optimism bias mean that the DCF estimates are completely unreliable?

A8. No. The effect of optimism bias is least likely to affect DCF estimates for large, rate regulated companies in relatively stable segments of an industry. Furthermore, the magnitude of the optimism bias (if any) for regulated companies is not clear. This issue

is addressed in a paper by Chan, Karceski, and Lakonishok (2003) who sort companies on the basis of the size of the I/B/E/S forecasts to test the level of optimism bias. Utilities constitute 25 percent of the companies in lowest quintile, and by one measure the level of optimism bias is 4 percent. However, the 4 percent figure does not represent the complete characterization of the results in the paper. Table IX of the paper shows that the median I/B/E/S forecast for the first (lowest) quintile averages 6.0 percent. The realized "Income before Extraordinary Items" is 2.0 percent (implying a four percent upward bias in I/B/E/S forecasts), but the "Portfolio Income before Extraordinary Items" is 8.0 percent (implying a two percent downward bias in I/B/E/S forecasts).

The difference between the "Income before Extraordinary Items" and "Portfolio Income before Extraordinary Items" is whether individual firms or a portfolio are used in estimating the realized returns. The first is a simple average of all firms in the quintile while the second is a market value weighted-average. Although both measures of bias have their own drawbacks according to the authors,[2] the Portfolio Income measure gives more weight to the larger firms in the quintile such as regulated utilities. In addition, the paper demonstrates that "analysts' forecasts as well as investors' valuations reflect a wide-spread belief in the investment community that many firms can achieve streaks of high growth in earnings."[3] Therefore, it is not clear how severe the problem of optimism bias may be for regulated utilities or even whether there is a problem at all.

Further, the National Association of Security Dealers (NASD) was designed to reduce the conflicts of interest and pressures brought against security analysts and recently a Joint Report by NASD and the New York Stock Exchange ("NYSE") on the reforms stated

> … the SRO Rules have been effective in helping restore integrity to research by minimizing the influences of investment banking and promoting transparency of other potential conflicts of interest. Evidence

[2] Chan, Karceski, and Lakonishok, *op. cit.*, p. 675.

[3] Chan, Karceski, and Lakonishok, *op. cit.*, p. 663.

also suggests that investors are benefiting from more balanced and accurate research to aid their investment decisions.[4]

The report does note additional reforms are advisable, but the situation is far different today than during the height of the tech bubble when analyst objectivity was clearly suspect.

Finally, the two-stage DCF model also is an attempt to adjust for any over optimistic (or pessimistic) growth rate forecasts by substituting the long-term GDP growth rate for the 5-year growth rate forecasts of the analysts in the years after year 5.

B. CONCLUSIONS ABOUT THE DCF MODEL

Q9. Please sum up the implications of this part of the appendix.

A9. The unavoidable questions about the DCF model's strong assumptions — whether the basic present value formula works for stocks, whether option pricing effects are important for the company, whether the right variant of the basic formula has been found, and whether the true growth rate expectations have been identified — cause me to view the DCF method as *inherently* less reliable than the equity risk premium approach, the other approach I use. However, because the DCF method has been widely used in the past and in other forums when the industry's economic conditions were different from today's, I submit DCF evidence in this case. DCF estimates also serve as a check on the values provided by the risk positioning approach methods.

II. EMPIRICAL DCF RESULTS

Q10. How is this part of the appendix organized?

A10. This section presents the details of my DCF analyses, which are summarized in my direct testimony. The first part describes some preliminary matters, such as data inputs. Then it turns to the details of the DCF estimates themselves.

[4] Joint Report by NASD and NYSE on the Operation and Effectiveness of the Research Analyst Conflict of Interest Rules, December 2005, p. 44.

In particular, implementation of the simple DCF models described above requires an estimate of the current price, the dividend, and near-term and long-run growth rate forecasts. The simple DCF model relies only on a single growth rate forecast, while the multi-stage DCF model employs both near-term individual company forecasts and long-run GDP growth rate forecasts. The remaining parts of this section describe each of these inputs in turn.

A. PRELIMINARY MATTERS

Q11. In Appendix C you discuss estimating cost of capital and implied cost of equity using the Risk Positioning methodology. What, if anything, is different when you use the DCF method?

A11. The timing of the market value capital structure calculations is different in the DCF method and in the risk positioning method. The risk positioning method relies on the average capital structure over the period used to estimate beta while the DCF approach uses only current data, so the relevant market value capital structure measure is the most recent that can be calculated. This capital structure is reported in columns [1]-[3] of Tables No. MJV-4.

B. GROWTH RATES

Q12. What growth rates do you use?

A12. For reasons discussed above, historical growth rates today are generally unreliable as forecasts of current investor expectations for the electric utilities sample. I therefore use rates forecasted by security analysts.

The ideal in a DCF application would be a detailed forecast of future dividends, year by year well into the future, based on a large sample of investment analysts' expectations. I know of no source of such data. Dividends are ultimately paid from earnings, however, and earnings forecasts are available for a few years. Investors do not expect dividends to grow in lockstep with earnings, but for companies for which the DCF approach can be used reliably (*i.e.*, for relatively stable companies whose prices do not include the option-

like values described previously), they do expect dividends to track earnings over the long-run. Thus, use of earnings growth rates as a proxy for expectations of dividend growth rates is a common practice.

Accordingly, the first step in my DCF analysis is to examine a sample of investment analysts' forecasted earnings growth rates. For my sample of electric utility companies, I utilize BEst forecasts as provided by Bloomberg and *Value Line's* forecasted earnings growth.[5] The projected earnings growth rates for the sample companies are in Table No. MJV-5. Column [1] of Table No. MJV-5 reports analysts' forecasts of the long-term earnings growth while column [2] reports the number of analysts that provided a BEst forecast, and column [6] reports the average of the BEst and *Value Line* five-year forecasts. (I treat the *Value Line* forecasts as though they overlap exactly with the forecasts from BEst.) These growth rates underlie my simple and multi-stage DCF analyses.

In particular, the five-year average annual growth rate is the perpetual growth rate I employ in the simple DCF model. In the multi-stage model, I rely on the company-specific growth rate until mid-2014 and on the long-term GDP forecast for mid-2019 onwards. During the period from mid-2014 to mid-2019, I assume the growth rate converges linearly towards the long-term GDP forecast, which is reached in 2019.[6]

Q13. Do these growth rates correspond to the ideal you mentioned above?

A13. No, not completely. While forecasted growth rates are the quantity required in principle, the forecasts need to go far enough out into the future so that it is reasonable to believe that investors expect a stable growth path afterwards. The growth rates estimates do not support the view that investors are expecting growth rates equal to the single perpetual growth rate assumed in the simple DCF model. The 5-year growth rate estimates for the

[5] The BEst forecasts were downloaded from Bloomberg on March 2, 2009. The *Value Line* growth rates were inferred from the most recent *Value Line Plus Editions*, dated December 26, 2008, February 6, 2009, and February 27, 2009.

[6] I use the long-term U.S. GDP growth estimate from *Blue Chip Economic Indicators* (March 10, 2009).

sample companies are not homogeneous as can be seen by reference to Table No. MJV-5. The forecasts for the companies in my sample range from 2.9 to 13.8 percent, with the average of 7.0 percent which is higher than the long-term forecast of 4.9 percent for the U.S. GDP.

Q14. How well are the conditions needed for DCF reliability met at present?

A14. The requisite conditions for the sample companies are not fully met at this time. Of particular concern for this proceeding is the uncertainty about what investors truly expect the long-run outlook for the sample companies to be. The longest time period available for growth rate forecasts of which I am aware is five years. The long-run growth rate (*i.e.*, the growth rate after the energy industry settles into a steady state, which is certainly *beyond* the next five years for this industry) drives the actual results one gets with the DCF model. Unfortunately, this implies that unless the company or industry in question is stable, so there is little doubt as to the growth rate investors expect, DCF results in practice can end up being driven by the subjective judgment of the analyst who performs the work.

This is a problem at present because it is hard to imagine that today's energy industry would accurately be described as stable. Inflation and interest rates have largely stabilized over the last 10 years, but the future dynamics of oil and natural gas prices and demand for electricity remains highly uncertain. Additionally, the electric industry is going through a series of mergers and acquisitions, which affects the companies' earnings growth rate estimates. This is one reason why companies involved in mergers and acquisitions are normally excluded from the sample. There has also been financial distress among companies specializing in trading natural gas and electricity products which affects both regulated and unregulated companies. Taken together, these factors mean that it may be some time before the electric utility industry settles into anything investors will see as a stable equilibrium.

Such circumstances imply that a regulator may often be faced with a wide range of DCF numbers, none of which can be well grounded in objective data on true long-run growth

expectations, *because no such objective data now exist*. DCF for firms or industries in flux is *inherently* subjective with regard to a parameter (the long-run growth rate) that drives the answer one gets.

It is clear that much longer detailed growth rate forecasts than currently available from BEst and *Value Line* would be needed to implement the DCF model in a completely reliable way for the sample at this time

C. DIVIDEND AND PRICE INPUTS

Q15. What values do you use for dividends and stock prices?

A15. Dividends are the last recorded dividend payments as reported by Bloomberg as of March 2, 2009. This dividend is grown at the estimated growth rate and divided by the price described below to estimate the dividend yield for the simple and multi-stage DCF models.

Stock prices are the average of the closing stock prices for the 15 trading days (approximately three weeks) ending March 2, 2009. These time periods coincide with the dates I obtained the BEst growth forecasts. I do not use a longer period to measure the price because that would be inconsistent with the principles that underlie the DCF formula. The DCF approach assumes the stock price is the present value of future expected dividends. Stock prices six months or a year ago reflect expectations at that time, which are different from those that underlie the currently available growth forecasts. At the same time, use of an average over a brief period helps guard against a company's price on a particular day price being unduly influenced by mistaken information, differences in trading frequency, and the like.

The closing stock price is used because it is at least as good as any other measure of the day's outcome, and may be better for DCF purposes. In particular, if there were any single price during the day that would affect investors' decisions to buy or sell a stock, I would suspect that it would be each day's closing price, not the high or low during the

day. The daily price changes reported in the financial pages, for example, are from close to close, not from high to high or from low to low.

D. COMPANY-SPECIFIC DCF COST OF CAPITAL ESTIMATES

Q16. What DCF estimates do these data yield?

A16. The cost of equity results for the simple and multi-stage DCF models are shown in Table No. MJV-6. Panel A reports the results for the simple DCF method, and Panel B reports the results for the multi-stage DCF method using the long-term GDP growth rate as the perpetual growth rate.

Q17. What overall cost of capital estimates result from the DCF cost of equity estimates?

A17. The capital structure, DCF cost of equity, and cost of debt estimates are combined to obtain the overall after-tax weighted-average cost of capital for each sample company. These results are presented in Table No. MJV-7. Panel A relies on the simple DCF cost of equity results, and Panel B relies on the multi-stage DCF cost of equity results.

Q18. What information do you report in Table No. MJV-8?

A18. This table reports the return on equity consistent with the sample's estimated overall after-tax weighted-average cost of capital and an equity thickness of 49.1 percent for WPL. For both the simple DCF and multistage DCF methods, the sample's average ATWACC is reported in column [1] of Table No. MJV-8. Column [8] reports the return on equity as if the sample companies' average market value capital structure had been one with 49.1 percent equity.

Q19. What are the implications of these results?

A19. The implication of these numbers is discussed in my direct testimony, along with the findings of the equity risk premium approach.

APPENDIX E

EFFECT OF DEBT ON THE COST OF EQUITY

Q1. What is the purpose of this Appendix?

A1. In this appendix, I provide details on the effects of debt on the cost of equity. First, I summarize a fairly large body of financial research on capital structure. Second, I provide an extended example to illustrate the effect of debt on the cost of equity.

I. AN OVERVIEW OF THE ECONOMIC LITERATURE

Q2. What is the focus of the economic literature on the effects of debt?

A2. The economic literature focuses on the effects of debt on the value of a firm. The standard way to recognize one of these effects, the impact of the fact that interest expense is tax-deductible, is to discount the all-equity after-tax operating cash flows generated by a firm or an investment project at a weighted average cost of capital, typically known in textbooks as the "WACC." The textbook WACC equals the *market*-value weighted average of the cost of equity and the *after-tax*, *current* cost of debt. However, rate regulation in North America has a legacy of working with another weighted-average cost of capital, the *book*-value weighted average of the cost of equity and the *before-tax*, *embedded* cost of debt. To distinguish the concepts, I refer to the after-tax weighted-average cost of capital as ATWACC.

Q3. How is this section of the appendix organized?

A3. It starts with the tax effects of debt. It then turns to other effects of debt.

A. TAX EFFECTS

Q4. What are the key findings in the literature regarding tax effects?

A4. Three seminal papers are vital for this literature. The first assumes no taxes and risk-free debt. The second adds corporate income taxes. The third adds personal income taxes.

1. Base Case: No Taxes, No Risk to High Debt Ratios

Q5. Please start by explaining the simplest case of the effect of debt on the value of a firm.

A5. The "base case," no taxes and no costs to excessive debt, was worked out in a classic 1958 paper by Franco Modigliani and Merton Miller, two economists who eventually won Nobel Prizes in part for their body of work on the effects of debt.[1] Their 1958 paper made what is in retrospect a very simple point: if there are no taxes and no risk to the use of excessive debt, use of debt will have no effect on a company's operating cash flows (i.e., the cash flows to investors as a group, debt plus equity combined). If the operating cash flows are the same regardless of whether the company finances mostly with debt or mostly with equity, then the value of the firm cannot be affected at all by the debt ratio. In cost of capital terms, this means the overall cost of capital is constant regardless of the debt ratio, too.

In the base case, issuing debt merely divides the cash flows into two pools, one for bondholders and one for shareholders. If the divided pools have different priorities in claims on the cash flows, the risks and costs of capital will differ for each pool. But the risk and overall cost of capital of the entire firm, the sum of the two pools, is constant regardless of the debt ratio. Thus,

$$r_1^* = r_{A1} \qquad \text{(E-1a)}$$

where r_1^* is the overall after-tax cost of capital at any particular capital structure and r_{A1} is the all-equity cost of capital for the firm. (The "1" subscripts distinguish the case where there are no taxes from subsequent equations that consider first corporate and then both corporate and personal taxes.) With no taxes and no risk to debt, the overall cost of capital does not change with capital structure.

This implies that the relationship of the overall cost of capital to the component costs of debt and equity is

[1] Franco Modigliani and Merton H. Miller (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review*, 48, pp. 261-297.

$$r_{E1} \times \left(\frac{E}{V}\right) + r_{D1} \times \left(\frac{D}{V}\right) = r_1^* \qquad \text{(E-1b)}$$

with the overall cost of capital (r^*) on the *right* side, as the *independent* variable, and the costs of equity (r_E) and debt (r_D) on the left side, as *dependent* variables determined by the overall cost of capital and by the capital structure (i.e., the shares of equity (E) and debt (D) in overall firm value ($V = E + D$) that the firm happens to choose. Note that if equation (E-1a) were correct, the equation that solved it for the cost of equity would be,

$$r_{E1} = r_1^* + (r_1^* - r_D) \times \left(\frac{D}{E}\right) \qquad \text{(E-1c)}$$

Note also that (D / E) gets exponentially higher in this equation as the debt-to-value ratio increases[2] i.e., the cost of equity increases exponentially with leverage.

2. Corporate Tax Deduction for Interest Expense

Q6. What happens when you add corporate taxes to the discussion?

A6. If corporate taxes exist with risk-free debt (and if only taxes at the corporate level matter, not taxes at the level of the investor's personal tax return), the initial conclusion changes. Debt at the corporate level reduces the company's tax liability by an amount equal to the marginal tax rate times interest expense. All else equal, this will add value to the company because more of the operating cash flows will end up in the hands of investors as a group. That is, if only corporate taxes mattered, interest would add cash to the firm equal to the corporate tax rate times the interest expense. This increase in cash would increase the value of the firm, all else equal. In cost of capital terms, it would reduce the overall cost of capital.

How much the value of the firm would rise and *how far* the overall cost of capital would fall would depend in part on how often the company adjusts its capital structure, but this is a second-order effect in practice. (The biggest effect would be if companies could

[2] For example, at 20-80, 50-50, and 80-20 debt-equity ratios, (D / E) equals, respectively, (20/80) = 0.25, (50/50) = 1.0, and (80/20) = 4.0. The extra 30 percent of debt going from 20-80 to 50-50 has much less impact on (D / E) [i.e., by moving it from 0.25 to 1.0] than the extra 30 percent of debt going from 50-50 to 80-20 [i.e., by moving it from 1.0 to 4.0]. Since the cost of equity equals a constant risk premium times the debt-equity ratio, the cost of equity grows ever more rapidly as you add more and more debt.

issue riskless perpetual debt, an assumption Profs. Modigliani and Miller explored in 1963, in the second seminal paper;[3] this assumption could *not* be true for a real company.) Prof. Robert A. Taggart provides a unified treatment of the main papers in this literature and shows how various cases relate to one another.[4] Perhaps the most useful set of benchmark equations for the case where only corporate taxes matter are:

$$r_2^* = r_{A2} - r_D \times t_C \times \left(\frac{D}{V}\right) \quad \text{(E-2a)}$$

$$r_2^* = r_{E2} \times \left(\frac{E}{V}\right) + r_D \times \left(\frac{D}{V}\right) \times (1 - t_C) \quad \text{(E-2b)}$$

which imply for the cost of equity,

$$r_{E2} = r_{A2} + (r_{A2} - r_D) \times \left(\frac{D}{E}\right) \quad \text{(E-2c)}$$

where the variables have the same meaning as before but the "2" subscripts indicate the case that considers corporate but not personal taxes.

Note that Equation (E-2a) implies that when only corporate taxes matter, the overall after-tax cost of capital declines steadily as more debt is added, until it reaches a minimum at 100 percent debt (i.e., when $D/V = 1.0$). Note also that Equation (E-2c) still implies an exponentially increasing cost of equity as more and more debt is added. In fact, except for the subscript, Equation (E-2c) looks just like Equation (E-1c). However, whether any value is added and whether the cost of capital changes at all also depends on the effect of taxes at the personal level.

3. Personal Tax Burden on Interest Expense

Q7. How do personal taxes affect the results?

A7. Ultimately, the purpose of investment is to provide income for consumption, so personal taxes affect investment returns. For example, in the U.S., municipal bonds have lower

[3] Franco Modigliani and Merton H. Miller (1963), "Corporate Income Taxes and the Cost of Capital: A Correction," *American Economic Review*, 53, pp. 433-443.

[4] Robert A. Taggart, Jr. (1991), "Consistent Valuation and Cost of Capital Expressions with Corporate and Personal Taxes," *Financial Management* 20, pp. 8-20.

interest rates than corporate bonds because their income is taxed less heavily at the personal level. In general, capital appreciation on common stocks is taxed less heavily than interest on corporate bonds because (1) taxes on unrealized capital gains are deferred until the gains are realized, and (2) the capital gains tax rate is lower. Dividends are taxed less heavily than interest, also, under current tax law.[5] The effects of personal taxes on the cost of common equity are hard to measure, however, because common equity is so risky.

Professor Miller, in his Presidential Address to the American Finance Association,[6] explored the issue of how personal taxes affect the overall cost of capital. The paper pointed out that personal tax effects could offset the effect of corporate taxes entirely.

Q8. Is it likely that the effect of personal taxes will completely neutralize the effect of corporate taxes?

A8. I do not believe so, although the likelihood of such a result would be increased if the current federal tax reductions on dividends and capital gains became permanent rather than expiring in 2010. However, personal taxes are important even if they do not make the corporate tax advantage on interest vanish entirely. Capital gains and dividend tax advantages definitely convey some personal tax advantage to equity, and even a partial personal advantage to equity reduces the corporate advantage to debt.

The Taggart paper explores the case of a partial offset, also. With personal taxes, the risk-free rate on the security market line is the after-personal-tax rate, which must be equal for risk-free debt and risk-free equity.[7] Therefore, the pre-personal-tax risk-free rate for equity will generally not be equal to the pre-personal-tax risk-free rate for debt. In particular, $r_{fE} = r_{fD} \times [(1-t_D)/(1-t_E)]$, where r_{fE} and r_{fD} are the risk-free costs of

[5] The current maximum personal tax rate on dividend income was extended to the end of 2010 by the President on May 17, 2006. It is uncertain whether the reduced rates on dividend income will be further extended.

[6] Merton H. Miller (1977), "Debt and Taxes," *The Journal of Finance*, 32: 261-276, the third of the seminal papers mentioned earlier.

equity and debt and t_E and t_D are the personal tax rates for equity and debt, respectively. In terms of the cost of debt, the Taggart paper's results imply that a formal statement of these effects can be written as:[8]

$$r_3^* = r_{A3} - r_D \times t_N \times \left(\frac{D}{V}\right) \quad \text{(E-3a)}$$

$$= r_{E3} \times \left(\frac{E}{V}\right) + r_D \times \left(\frac{D}{V}\right) \times (1 - t_C) \quad \text{(E-3b)}$$

which imply

$$r_{E3} = r_{A3} + \left[r_{A3} - r_D \times \left(\frac{1 - t_D}{1 - t_E}\right)\right] \times \left(\frac{D}{E}\right) \quad \text{(E-3c)}$$

Suppose, for example, that t_C = 35 percent, t_E = 7.7 percent and t_D = 40 percent. Then $[(1 - t_D)/(1 - t_E)] = 0.65 = (1 - t_C)$. That condition corresponds to Miller's 1977 paper, in which the net personal tax advantage of equity fully offsets the net corporate tax advantage of debt. Note also that in that case, $t_N = 0$.[9] Therefore, if the personal tax advantage on equity fully offsets the corporate tax advantage on debt, Equation (E-3a) confirms that the overall after-tax cost of capital is a constant.

However, it is unlikely that the personal tax advantage of equity fully offsets the corporate tax advantage of debt. If taxes were all that mattered (i.e., if there were no other costs to debt), the overall after-corporate-tax cost of capital would still fall as debt was added, just not as fast.

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[7] As Prof. Taggart notes (his footnote 9), it is not necessary that a specific, risk-free equity security exist as long as one can be created synthetically, through a combination of long and short sales of traded assets. Such constructs are a common analytical tool in financial economics.

[8] The net all-tax effect of debt on the overall cost of capital, t_N, equals $\{[t_C + t_E - t_D - (t_C \times t_E)] / (1 - t_E)\}$, where t_D is the personal tax rate on debt, as before. This measure of net tax effect is designed for use with the cost of debt in Equation (E-3a), which seems more useful in the present context. The Taggart paper works with a similar measure, but one which is designed for use with the cost of risk-free equity in the equivalent Taggart equation.

[9] In the above example, $t_N = \{[0.35 + 0.077 - 0.4 - (0.35 \times 0.077)] / (1.0 - 0.077)\} = 0.0/0.923 = 0$.

Finally, note that the overall after-tax cost of capital, Equation (E-3b), still uses the corporate tax rate even when personal taxes matter. Equations (E-2b) and (E-3b) both correspond to the usual formula for the ATWACC. Personal taxes affect the way the cost of equity changes with capital structure -- Equation (E-3c) -- but not the formula for the overall after-tax cost of capital given that cost of equity.

B. NON-TAX EFFECTS

Q9. Please describe the non-tax effects of debt.

A9. If debt is truly valuable, firms should use as much as possible, and competition should drive firms in a particular industry to the same, optimal capital structure for the industry. If debt is harmful on balance, firms should avoid it. Neither picture corresponds to what we actually see. A large economic literature has evolved to try to explain why.

Part of the answer clearly is the costs of excessive debt. Here the results cannot be reduced to equations, but they are no less real for that fact. As companies add too much debt, the costs come to outweigh the benefits. Too much debt reduces or eliminates financial flexibility, which cuts the firm's ability to take advantage of unexpected opportunities or weather unexpected difficulty. Use of debt rather than internal financing may be taken as a negative signal by the market.

Even if the company is generally healthy, more debt increases the risk that the company cannot use all of the interest tax shields in a bad year. As debt continues to grow, this problem grows and others may crop up. Management begins to worry about meeting debt payments instead of making good operating decisions. Suppliers are less willing to extend trade credit, and a liquidity shortage can translate into lower operating profits. Ultimately, the firm might have to go through the costs of bankruptcy and reorganization. Collectively, such factors are known as the costs of "financial distress."[10]

The net tax advantage to debt, if positive, is affected by costs such as a growing risk that the firm might have to bear the costs of financial distress. First, the expected present

[10] See, for example, Section 18.3 of Brealey, Myers and Allen, 2006, *Principles of Corporate Finance*, 8th Edition, McGraw-Hill/Irwin, 2006.

value of these costs offsets the value added by the interest tax shield. Second, since the likelihood of financial distress is greater in bad times when other investments also do poorly, the possibility of financial distress will increase the risks investors bear. These effects increase the variability of the value of the firm. Thus, firms that use too much debt can end up with a higher overall cost of capital than those that use none.

Other parts of the answer include the signals companies send to investors by the decision to issue new securities, and by the type of securities they issue. Other threads of the literature explore cases where management acts against shareholder interests, or where management attempts to "time" the market by issuing specific securities under different conditions. For present purposes, the important point is that no theory, whether based on taxes or on some completely different issue, has emerged as "the" explanation for capital structure decisions by firms. Nonetheless, despite the lack of a single "best" theory, there is a great deal of relevant empirical research.

Q10. What does that research show?

A10. The research does not support the view that debt makes a material difference in the value of the firm, at least not once a modest amount of debt is in place. If debt were truly valuable, competitive firms should use as much debt as possible short of producing financial distress, and competitive firms that use less debt ought to be less profitable. The research shows exactly the opposite.

For example, Kester[11] found that firms in the same industry in both the U.S. and Japan do not band around a single, "optimal" capital structure, and the most profitable firms are the ones that use the *least* debt. This finding comes despite the fact that both countries at the time (unlike the U.S. currently) had fully "classical" tax systems, in which dividends are taxed fully at both the corporate and personal level. Wald[12] confirms that high profitability implies low debt ratios in France, Germany, Japan, the U.K., and the U.S.

[11] Carl Kester (1986), "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Concerns," *Financial Management*, 15:5-16.

[12] John K. Wald (1999), "How Firm Characteristics Affect Capital Structure: An International Comparison," *Journal of Financial Research*, 22:161-167.

Booth *et al.* find the same result for a sample of developing nations.[13] Fama and French[14] analyze over 2000 firms for 28 years (1965-1992, inclusive) and conclude, "Our tests thus produce no indication that debt has net tax benefits."[15] A paper by Graham[16] carefully analyzes the factors that might have led a firm not to take advantage of debt. It confirms that a large proportion of firms that ought to benefit substantially from use of additional debt, including large, profitable, liquid firms, appear not to use it "enough."

This research leaves us with only three options: either (1) apparently good, profit-generating managers are making major mistakes or deliberately acting against shareholder interests, (2) the benefits of the tax deduction on debt are less than they appear, or (3) the non-tax costs to use of debt offset the potential tax benefits. Only the first of these possibilities is consistent with the view that the tax deductibility of debt conveys a material cost advantage. Moreover, if the first explanation were interpreted to mean that otherwise good managers are acting against shareholder interests, either deliberately or by mistake, it would require the additional assumption that their competitors (and potential acquirers) let them get away with it.

Q11. Are there any explanations in the financial literature for this puzzle other than stupid or self-serving managers at the most profitable firms?

A11. Yes. For example, Stewart C. Myers, a leading expert on capital structure, made it the topic of his Presidential Address to the American Finance Association.[17] The poor performance of tax-based explanations for capital structure led him to propose an entirely different mechanism, the "pecking order" hypothesis. This hypothesis holds that the net tax benefits of debt (i.e., corporate tax advantage over personal tax disadvantage) are at

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[13] Laurence Booth *et al.* (2001), "Capital Structures in Developing Countries," *The Journal of Finance* Vol. LVI, pp. 87-130, finds at p. 105 that "[o]verall, the strongest result is that profitable firms use less total debt. The strength of this result is striking ..."

[14] Eugene F. Fama and Kenneth R. French (1998), "Taxes, Financing Decisions and Firm Value," *The Journal of Finance*, 53:819-843.

[15] *Ibid.*, p. 841.

[16] John R. Graham (2000), "How Big Are the Tax Benefits of Debt," *The Journal of Finance*, 55:1901-1942.

[17] Stewart C. Myers (1984), "The Capital Structure Puzzle," *The Journal of Finance*, 39: 575-592. See also S. C. Myers and N. S. Majluf (1984), "Corporate Financing Decisions When Firms Have Information Investors Do Not Have," *Journal of Financial Economics* 13:187-222.

most of a second order of importance relative to other factors that drive actual debt decisions.[18] Similarly, Baker and Wurgler (2002)[19] observe a strong and persistent impact that fluctuations in market value have on capital structure. They argue that this impact is not consistent with other theories. The authors suggest a new capital structure theory based on market timing -- capital structure is the cumulative outcome of attempts to time the equity market.[20] In this theory, there is no optimal capital structure, so market timing financing decisions just accumulate over time into the capital structure outcome. (Of course, this theory only makes sense if investors do not recognize what managers are doing.)

Q12. Do inter-firm differences within an industry explain the wide variations in capital structure across the firms in an industry?

A12. No. This view is contradicted by the empirical research. As mentioned before, it has long been found that the most profitable firms in an industry, i.e., those in the best position to take advantage of debt, use the least.[21] Graham (2000) carefully examines differences in firm characteristics as possible explanations for why firms use "too little" debt and concludes that such differences are *not* the explanation: firms that ought to benefit substantially from more debt by all measurable criteria, if the net tax advantage of debt is truly valuable, voluntarily do not use it.[22]

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[18] See also Stewart C. Myers (1989), "Still Searching for Optimal Capital Structure," *Are the Distinctions Between Debt and Equity Disappearing?,* R.W. Kopke and E. S. Rosengren, eds., Federal Reserve Bank of Boston.

[19] Malcolm Baker and Jeffrey Wurgler (2002), "Market Timing and Capital Structure," *The Journal of Finance* 57:1-32.

[20] *Ibid*., p. 29.

[21] For example, Kester, *op. cit.* and Wald, *op. cit.*

[22] While not contradicting Graham's finding that differences in firm characteristics do not explain capital structure differences, Nengjiu Ju, Robert Parrino, Allen M. Poteshman, and Michael S. Weisbach, "Horses and Rabbits? Trade-Off Theory and Optimal Capital Structure," *Journal of Financial and Quantitative Analysis*, June 2005, pp. 1-24, looks at the issue in a different manner. Their paper uses a dynamic rather than static model to analyze the tradeoff between the tax benefits of debt and the risk of financial distress. It finds that bankruptcy costs by themselves are enough to explain observed capital structures, once dynamic effects are considered. This means debt is not as valuable as suggested by the traditional static analysis (of the sort used by Graham).

Nor does the research support the view that firms are constantly trying to adjust their capital structures to optimal levels. Additional research on the pecking order hypothesis demonstrates that firms do not tend towards a target capital structure, or at least do not do so with any regularity, and that past studies that seemed to show the contrary actually lacked the power to distinguish whether the hypothesis was true or not.[23] In the words of the Shyam-Sunder - Myers paper p. 242, "If our sample companies did have well-defined optimal debt ratios, it seems that their managers were not much interested in getting there."

II. EXPANDED EXAMPLE

Q13. What topics do you cover in this section?

A13. The discussion in my testimony did not detail the impact of different starting points for the level of debt nor did it address income earned on the investment, interest expense, or taxes. This section covers these topics. First, it discusses how the level of debt affects the cost of equity. Second, it addresses the influence of income and interest on the investment. Third, it explains the impact of taxes on capital structure decisions. The final topic covered in this section is the combined consequence of tax and non-tax effects of debt.

A. DETAILS OF DIFFERENT LEVELS OF DEBT

Q14. Why does more debt mean more risk for equity holders?

A14. Debt magnifies the variability of the equity return. As a simple example, think of an investor who takes money out of her savings and invests $100,000 in real estate. The future value of the real estate is uncertain. If the real estate market booms, she wins. If the real estate market goes down, she loses. Figure E-1 below illustrates this.

[23] Lakshmi Shyam-Sunder and Stewart C. Myers (1999), "Testing static tradeoff against pecking order models of capital structure," *Journal of Financial Economics* 51:219-244.

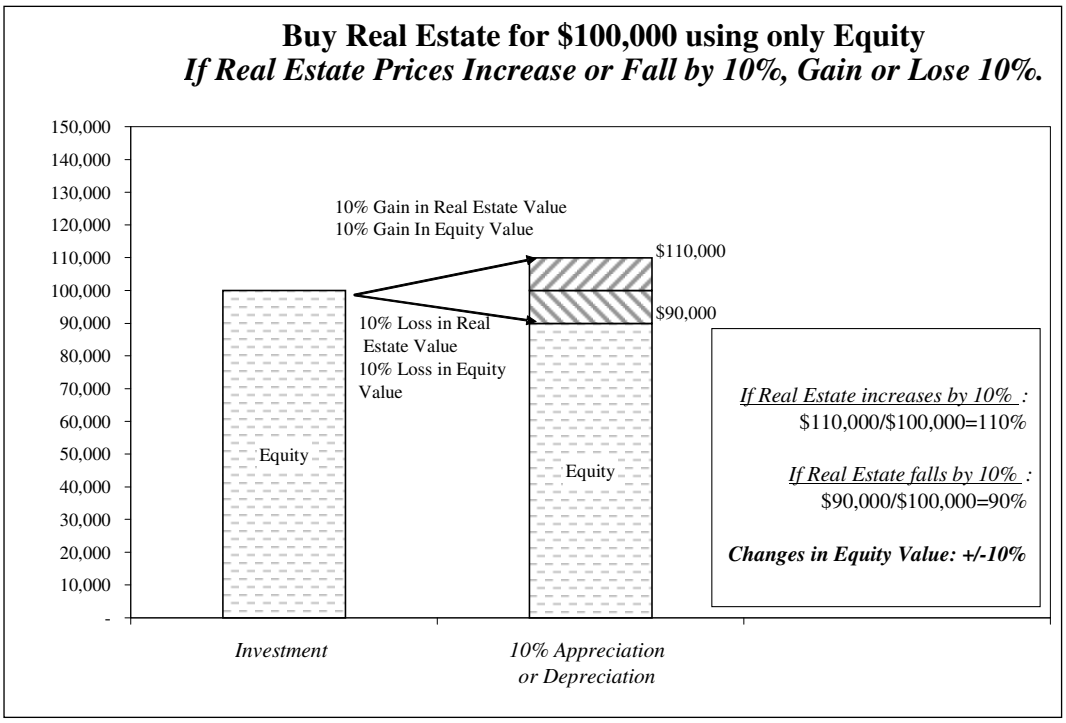


Figure E-1

In the scenario above, the investor financed her real estate purchase through 100 percent equity. Suppose instead that the investor had financed 50 percent of her real estate investment with a mortgage of $50,000. The mortgage lender does not expect to share in any benefits from increases in real estate values. Neither does the mortgage lender expect to share in any losses from falling real estate values, i.e., the investor carries the entire risk of fluctuating real estate prices. Figure E-2 illustrates this effect.

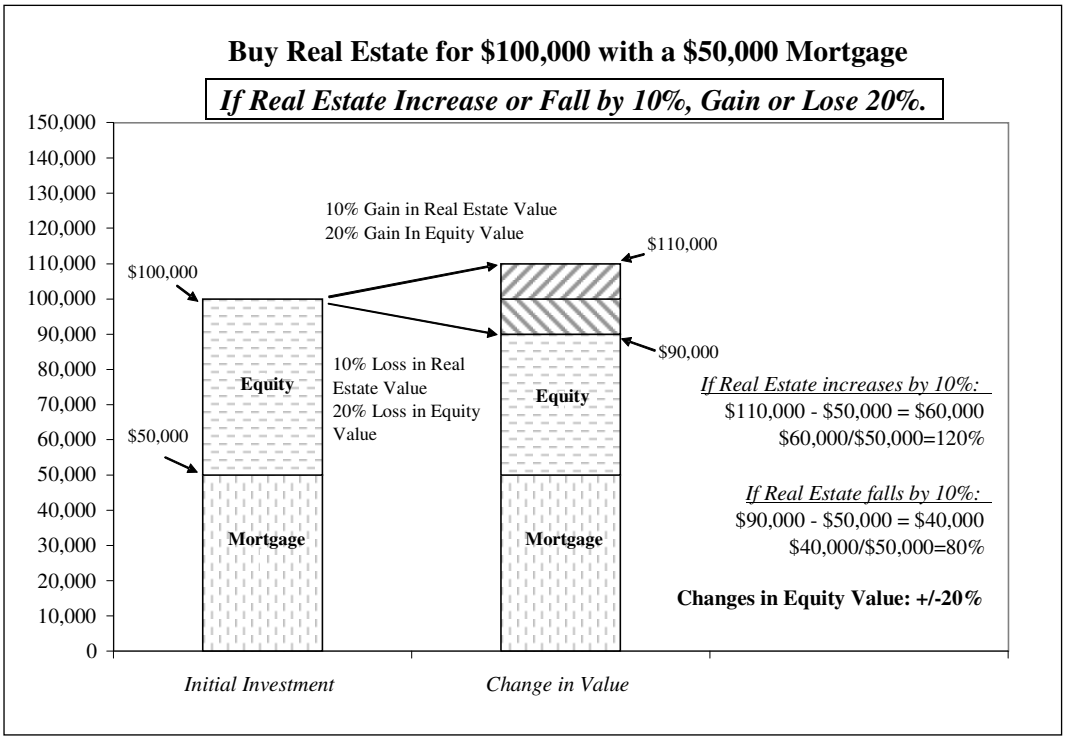


Figure E-2

In Figure E-2 where the investor financed her purchase through 50 percent equity and 50 percent debt, the variability in the investor's equity return is two times greater than that of Figure E-1. The entire fluctuation of 10 percent from rising or falling real estate prices falls on the investor's $50,000 equity investment. The lesson from the example is obvious, debt adds risk to equity.

Q15. What happens if the investor finances the real estate purchase with different proportions of debt?

A15. The equity return becomes more variable when the mortgage percentage is a greater proportion of the initial price. Table E-1 below calculates the return on equity when real estate prices increase by 10 percent when mortgages are 0 percent, 30 percent, 50 percent, and 70 percent of the initial price.

Table E-1: The Impact of Leverage on the Return on Equity

	100% Equity	70% Equity	50% Equity	30% Equity
Debt	$0	$30,000	$50,000	$70,000
Original Equity Investment	$100,000	$70,000	$50,000	$30,000
Increase in Market Value of Equity	$10,000	$10,000	$10,000	$10,000
Return on Equity Investment	10%	14.3%	20%	33.3%

Note that going from 70 percent equity down to 50 percent equity increases the return on the equity investment by 5.7 percent while going from 50 percent equity to 30 percent equity increases the return on equity by 13.3 percent. This illustrates a general point; the rate of return on equity increases more quickly at higher levels of debt than at lower levels. Investors demand a higher equity rate of return to bear more risk and debt magnifies equity's risk at an ever increasing rate. Therefore, the required equity rate of return goes up at an ever increasing rate as debt is added. This is not only basic finance theory, it is the everyday experience of anyone who buys a home. The bigger the mortgage, the more percentage risk the equity faces from changes in housing prices.

Q16. Please provide an example that illustrates why market values are relevant.

A16. Suppose in the above example that the investor has invested in real estate 10 years ago. Further assume that depreciation has reduced the book value of the real estate from $100,000 to $75,000 and assume the investor has paid off 40 percent of his $50,000 mortgage. Thus, the investor has a remaining mortgage of $30,000 (= 60% × $50,000). The book value of the investor's equity investment is therefore $45,000 (= $75,000 - $30,000).

What happens now if real estate prices rise or fall 20 percent? To answer that question, we need to know how real estate prices have developed over the past 10 years. If the market value of the real estate now is $200,000 then a 20 percent decrease in the price of

real estate ($40,000) is almost equal to the investor's book value equity. However, his market value equity (or net worth) is equal to the value of the real estate minus what he owes on the mortgage. If we assume that the market value of the mortgage equals the unpaid balance ($30,000), then the investor's net worth is calculated as follows:

Net Worth	=	Market Value of Real Estate	-	Remaining Mortgage
	=	$200,000	-	$30,000
	=	$170,000		

Therefore, the rate of return on equity due to a 20 percent decline in real estate prices is calculated in Table E-2.

Table E-2: Calculating the Rate of Return on Equity

Decline in Real Estate Value	$40,000
Market-Value Equity	$170,000
Rate of Return on Equity	- $40,000/$170,000 = -23.5%

B. THE IMPACT OF INCOME AND INTEREST

Q17. How does earning income from the investment and paying interest on debt affect the results?

A17. In the following explanation, I ignore income taxes which I deal with in Section C below. Assume the investor is receiving income, e.g., rent, from the real estate. Specifically, assume the investor receives $500 per month in income after all non-interest expenses ($6,000 per year). Also, assume that the expected appreciation is 5 percent per year, so the expected market value is $105,000 after one year. Then the expected rate of return from the real estate with all equity financing is:

$$\text{Expected Return on Equity @ 0\% debt} = \frac{\text{Expected Net Income + Expected Appreciation}}{\text{Initial Investment}}$$

$$= \frac{\$6{,}000 + (\$105{,}000 - \$100{,}000)}{\$100{,}000}$$

$$= 11\%$$

Now suppose that the mortgage interest rate were 5 percent. Then at a mortgage equal to 50 percent, or $50,000, interest expense would be ($50,000 x 0.05), or $2,500. The expected equity rate of return would be:

$$\text{Expected Return on Equity @ 50\% debt} = \frac{\text{Expected (Net Income + Appreciation) – Int. Expense}}{\text{Initial } \textit{Equity} \text{ Investment}}$$

$$= \frac{\$6{,}000 + \$5{,}000 - \$2{,}500}{\$50{,}000}$$

$$= 17\%$$

Notice that the expected return on equity is higher as is the risk carried by equity.

Q18. Can you provide a more general illustration?

A18. Yes. Figure E-3 uses these assumptions at different mortgage levels to plot both (i) the expected rate of return on the equity in the dwelling, and (ii) the realized rate of return on

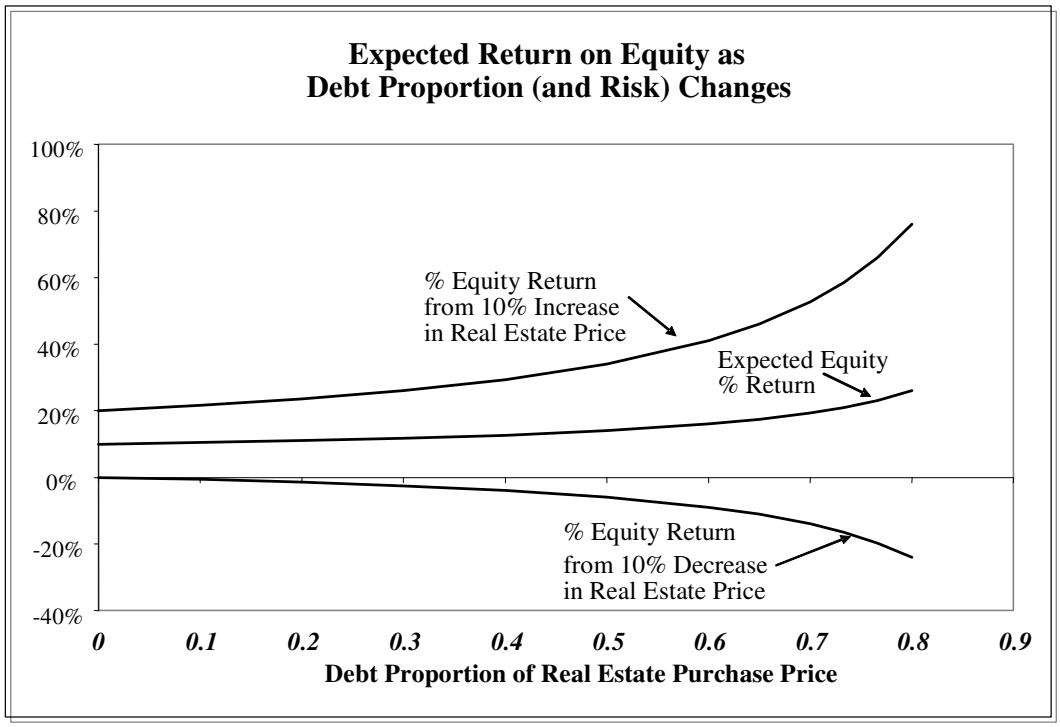


Figure E-3

that equity in a year if the dwelling value increases by 10 percent more than the expected 5 percent rate (i.e., if the value increases by 15 percent) or by 10 percent less than expected (i.e., if it decreases by 5 percent).[24]

The expected rate of return on equity increases at an increasing rate as the investor finances more and more of the real estate through loans (e.g., with a mortgage). Since equity bears all the risk of increases or decreases in real estate values (absent financial distress or bankruptcy), the amount of risk the buyer bears grows at an ever increasing rate as the mortgage percentage also increases.

Q19. What are the implications of this example?

A19. Any time an individual or a company uses debt to finance part an investment, the same risk magnifies. For example, if an investor buys stocks "on margin" -- by borrowing part of the money used to buy the stock -- the expected rate of return will be higher as will the

[24] For simplicity, the figure assumes the debt's interest rate is independent of the debt proportion. This might not always be true, and in general would not be true for a corporation that issued debt. However, the general shape of the graphs remains the same.

risks the investor carries. As an everyday example, imagine investing your retirement savings in a stock portfolio bought with as much margin as possible. If you were lucky, you could end up living very well in retirement. But you would be taking a lot of risk on the opposite outcome, since your portfolio could decline by more than 100 percent of your initial investment.

The same risk-magnifying effects happen when companies borrow to finance part of their investments.

C. THE EFFECT OF TAXES

Q20. What is the impact of taxes?

A20. Analyzing the net effect of taxes in capital structure decisions by corporations is an important part of the financial research. (Other parts of that research address such issues as the risk of financial distress or bankruptcy, and the signals corporations send investors by the choice of how to finance new investments.) The bottom line is that taxes complicate the picture without changing the basic conclusion.

Q21. Please describe the potential impact of taxes.

A21. Interest expense is tax-deductible for corporations. That increases the pool of cash the corporation gets to keep out of its operating earnings (i.e., its earnings before interest expense). With no debt, 100 percent of operating income is subject to taxes. With debt, only the equity part of the operating income is subject to taxes.

All else equal, the extra money kept from operating income increases the value of the corporation. The standard way to recognize that increase in value is to use an after-tax weighted-average cost of capital as a discount rate when valuing a company's operating cash flows.

Q22. Do personal taxes affect the value of debt, too?

A22. Yes, but in the other direction. One offset to debt's tax benefits at the corporate level is its higher tax burden at the personal level. Investors care about the money they get to keep after all taxes are paid, and while the corporation saves taxes by opting for debt over

equity, individuals pay more taxes on interest than on capital gains from equity (and for now, on dividends as well).

Q23. Are there factors other than taxes matter?

A23. Absolutely, "all else" does not remain equal as more debt is added. The more debt, the more the non-tax effects of debt offset the tax benefits. Other costs include such effects as a loss of flexibility, the possibility of sending negative signals to investors, and a host of costs and risks associated with the danger of financial distress.

Q24. Does the tradeoff between the tax and non-tax effects of debt mean that firms have well-defined, optimal capital structures?

A24. No, this sort of "tradeoff" model does not explain actual corporate behavior. A substantial body of economic research confirms that real-world corporations act as if, after a moderate amount of debt is in place, the tax benefits of debt are not worth debt's other costs. In country after country and in industry after industry, the most profitable corporations in an industry tend to use the least debt. The research on this point is quite thorough, and the finding that the most profitable companies tend to use the least debt in a given industry is robust. Yet these are the companies with the most operating income to shield from taxes, who would benefit most if interest tax shields were truly valuable net of debt's other costs. They also presumptively are the best-managed on average (else why are they the most profitable?). This means it is unrealistic to suppose that more debt is always better, or that greater tax savings due to higher interest expense always add value to the firm on balance.

Q25. If the tradeoff model doesn't explain capital structure decisions by firms, is there a model that does?

A25. No single model has (yet) emerged as 'the" explanation of capital structure. However, several alternative models attempt to model the tradeoff (e.g., the "pecking order" hypothesis and "agency cost" explanations).

Q26. What does the absence of an agreed theory of capital structure in the financial literature imply about the overall effect of debt on the value of the firm?

A26. The findings of the financial literature mean that within an industry, there is no well-defined optimal capital structure. The use of some debt does convey some value advantage in most industries, but that advantage is offset by other costs as firms add more debt.[25] The range of capital structures over which the value of the firm in any industry is maximized is wide and should be treated as flat. The location and level of that range, however, does vary from industry to industry, just as the overall cost of capital varies from industry to industry.

Figure E-4 illustrates the picture that emerges from the research. This figure shows the present value of an investment in each of four different industries. For simplicity, the investment is expected to yield $1.00 per year forever. For firms in relatively high-risk industries (Industry 1 in the graph, the lowest line), the $1.00 perpetuity is not worth much and any use of debt decreases firm value. For firms in relatively low-risk industries (Industry 4 in the graph), the perpetuity is worth more and substantial amounts of debt make sense. Industries 2 and 3 are intermediate cases.

The maximum net rate at which taxes can increase value in this figure equals 20 percent of interest expense, representing a balance between the corporate tax advantage to debt and the personal tax disadvantage. The figure plots the maximum possible impact of taxes on value as a separate line, starting at the all-equity value of the lowest-risk industry (Industry 4).

[25] Note that if debt did increase the value of the firm materially, competition would tend to take that value away, since issuing debt is an easy-to-copy competitive strategy. Prices would fall as firms copied the strategy, lowering operating earnings and passing the net tax advantages to debt through to customers (just as happens under rate regulation). Therefore, if also there were a narrow range of optimal capital structures within an industry, competition would drive all firms in the industry to capital structures within that range. This does not happen in practice, which contradicts one or both of the assumptions, i.e., (1) that debt adds material value on balance, and/or (2) that there is a narrow range of optimal capital structures.

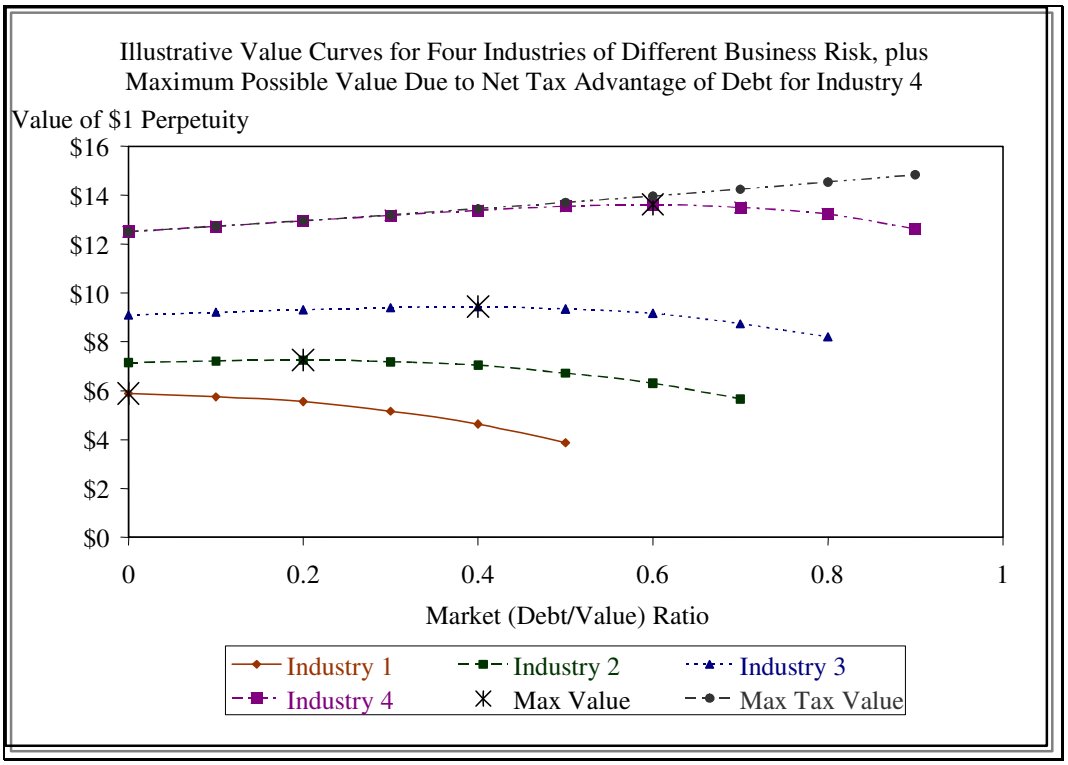


Figure E-4

Figure E-4 identifies a particular point as the maximum value on each of the four curves. However, the research shows that reliable identification of this maximum point, except in the extreme case where no debt should be used, is impossible. In accord with the research, the graph is prepared so that in none of the industries does a change in capital structure make much difference near the top of the curve. Even Industry 4, which increases in value at the maximum rate as quite a lot of debt is added, eventually must reach a broad range where changes in the debt ratio make little difference to firm value, given the research. For Industry 4, debt makes less than a 2 percent difference in the total value of the firm for debt-to-value ratios between 40 and 70 percent. (While these particular values are illustrative, numbers of this order of magnitude are the only ones consistent with the research.)

Q27. What does this imply for the overall cost of capital?

A27. Figure E-5 plots the after-tax weighted-average costs of capital ("ATWACCs") that correspond to the value curves in Figure E-4. This picture just turns Figure E-4 upside

down.[26] All the same conclusions remain, except that they are stated in terms of the overall cost of capital instead of the overall firm value. In particular, except for high-risk industries, the overall cost of capital is essentially flat across a broad middle range of capital structures for each industry, which is the only outcome consistent with the research. For Industry 4, for example, the ATWACC changes by less than 15 basis points for debt-to-value ratios between 40 and 70 percent.

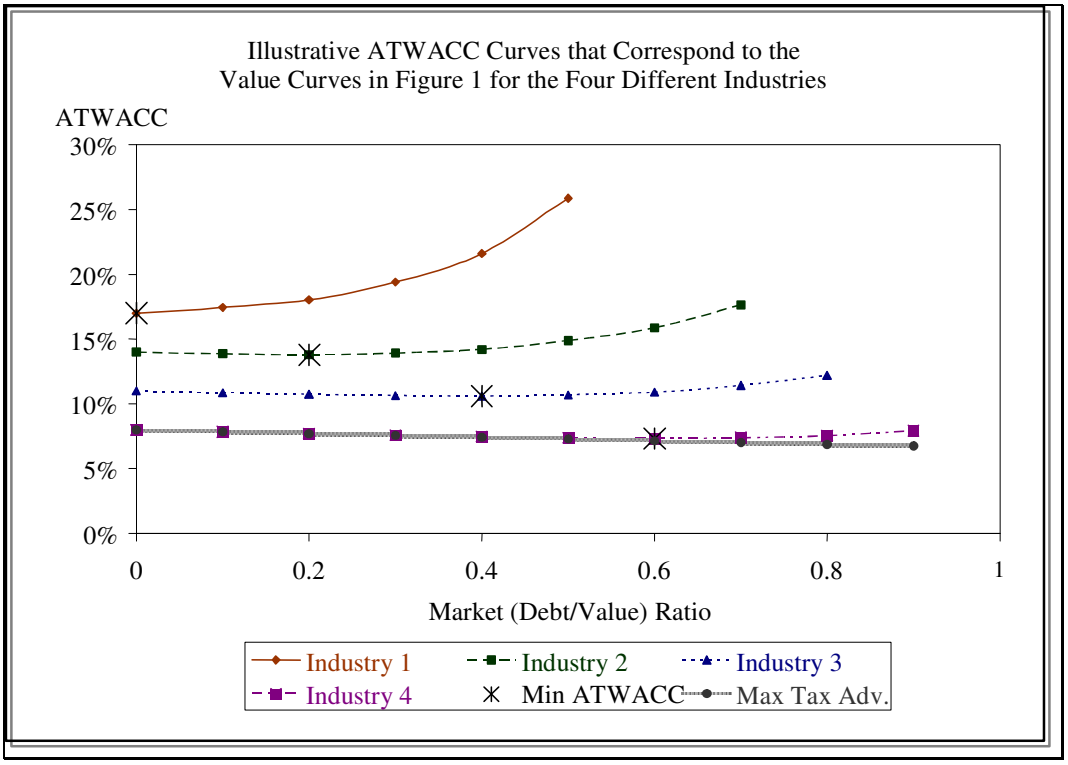


Figure E-5

Q28. How does this discussion relate to estimation of the right cost of equity for ratemaking purposes?

A28. When an analyst estimates the cost of equity for a sample of companies, s/he does so at the sample's actual market-value capital structure. That is, the sample evidence corresponds to ATWACCs that are already out somewhere in the broad middle range in

[26] Note that the actual estimated ATWACC at higher debt ratios will tend to underestimate the ATWACC that corresponds to the value curves in Figure E-4, which are depicted in Figure E-5, and so will tend to overestimate the value of debt to the firm. The reason is that some of the non-tax effects of excessive debt, such as a loss of financial flexibility, may be hard to detect and not show up in cost of capital measurement.

which changes in the debt ratio have little or no impact on the overall value of the firm or the ATWACC.

An analyst therefore should assume the ATWACCs for the sample companies are literally flat. This assumption always provides the exact tradeoff between the cost of equity and capital structure at the literal minimum of the company's ATWACC curve. The research shows that this minimum is actually a broad, flat region, as depicted above. If the company happens to be somewhat to one side or the other of the literal minimum within this region, the recommended procedure may lead to a small understatement or overstatement of the amount that the cost of equity will change as capital structure changes. The degree of this under- or overstatement, however, is very small compared to the inherent uncertainty in estimating the cost of equity in the first place. Otherwise, the financial research would have found very different results about the existence of a narrowly defined optimal capital structure.

D. COMBINED EFFECTS

Q29. Please summarize the implications for the combined impact of the tax and non-tax effects of debt.

A29. The most profitable firms do not behave as if the precise amount of debt they use makes any material difference to value, and competition does not force them into an alternative decision, as it would if debt were genuinely valuable. The explanation that fits the facts and the research is that within an industry, there is no well-defined optimal capital structure. Use of some debt does convey an advantage in most industries, but that advantage is offset by other costs as firms add more debt. The range of capital structures over which the value of the firm in any industry is maximized is wide and should be treated as flat. The location and level of that range, however, does vary from industry to industry, just as the overall cost of capital varies from industry to industry. To conclude that more debt does add more value, once the firm is somewhere in the normal range for the industry, is to conclude that corporate management in general is either blind to an easy source of value or otherwise incompetent (and that their competitors let them get away with it).

The finding that there is no narrowly defined optimal capital structure implies that analysts should estimate the ATWACCs for a sample of companies in a given industry and treat the average ATWACC value as independent of capital structure (at least within a broad middle range of capital structures). The right cost of equity for a rate-regulated company in the same industry is the number that yields the same ATWACC at the capital structure used to set the revenue requirement, since that is the cost of equity that (estimation problems aside) the sample companies would have had if their market-value capital structures had been equal to the regulatory capital structure.

Table No. MJV-1

Index to Tables for the Written Evidence of Michael J. Vilbert

Table No. MJV-2

US Electric Sample

Classification of Companies by Assets

Company	Company Category
American Electric Power Co Inc	R
Cleco Corp	R
Consolidated Edison Inc	R
Empire District Electric Co/The	R
Entergy Corp	MR
FirstEnergy Corp	MR
IDACORP Inc	R
MGE Energy Inc	R
NSTAR	R
Otter Tail Corp	MR
Pepco Holdings Inc	MR
Pinnacle West Capital Corp	R
PPL Corp	MR
Progress Energy Inc	R
SCANA Corp	MR
Southern Co	R
Wisconsin Energy Corp	R
Xcel Energy Inc	R

Sources and Notes:
EEI Q4 Financial Results. The asset ranking was as of 12/31/2007.
R = Regulated (greater than 80 percent of total assets are regulated).
MR = Mostly Regulated (50 to 80 percent of total assets are regulated).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel A: American Electric Power Co Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$10,693	$10,693	$10,079	$9,412	$9,088	$8,515	[a]
Shares Outstanding (in millions) - Common	406	406	400	397	394	396	[b]
Price per Share - Common	$30.02	$32.22	$47.10	$42.73	$37.34	$34.57	[c]
Market Value of Common Equity	$12,189	$13,085	$18,861	$16,951	$14,701	$13,684	[d] = [b] x [c].
Market to Book Value of Common Equity	1.14	1.22	1.87	1.80	1.62	1.61	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$61	$61	$61	$61	$61	$61	[f]
Market Value of Preferred Equity	$61	$61	$61	$61	$61	$61	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$3,775	$3,775	$3,026	$3,588	$3,945	$3,996	[h]
Current Liabilities	$6,297	$6,297	$5,161	$5,456	$5,460	$4,990	[i]
Current Portion of Long-Term Debt	$447	$447	$792	$1,269	$1,153	$1,345	[j]
Net Working Capital	($2,075)	($2,075)	($1,343)	($599)	($362)	$351	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$1,976	$1,976	$660	$18	$10	$23	[l]
Adjusted Short-Term Debt	$1,976	$1,976	$660	$18	$10	$0	[m] = See Sources and Notes.
Long-Term Debt	$15,536	$15,536	$14,202	$12,429	$11,073	$11,008	[n]
Book Value of Long-Term Debt	$17,959	$17,959	$15,654	$13,716	$12,236	$12,353	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($870)	($870)	($77)	$45	$190	$526	[p] = See Sources and Notes.
Imputed Debt	$3,580	$3,580	$2,237	$2,466	$2,252	$2,152	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$20,669	$20,669	$17,814	$16,227	$14,678	$15,031	[r] = [o] + [p] + [q].
Market Value of Debt	$20,669	$20,669	$17,814	$16,227	$14,678	$15,031	[s] = [r].
MARKET VALUE OF FIRM	$32,919	$33,816	$36,736	$33,240	$29,440	$28,776	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	37.03%	38.70%	51.34%	51.00%	49.93%	47.55%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.19%	0.18%	0.17%	0.18%	0.21%	0.21%	[v] = [g] / [t].
Debt - Market Value Ratio	62.79%	61.12%	48.49%	48.82%	49.86%	52.23%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel B: Cleco Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$1,060	$1,060	$1,010	$876	$684	$538	[a]
Shares Outstanding (in millions) - Common	60	60	60	58	50	50	[b]
Price per Share - Common	$20.77	$22.28	$27.78	$25.44	$20.75	$20.28	[c]
Market Value of Common Equity	$1,246	$1,336	$1,665	$1,463	$1,037	$1,007	[d] = [b] x [c].
Market to Book Value of Common Equity	1.18	1.26	1.65	1.67	1.52	1.87	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$1	$1	$1	$20	$22	$23	[f]
Market Value of Preferred Equity	$1	$1	$1	$20	$22	$23	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$466	$466	$406	$537	$434	$288	[h]
Current Liabilities	$361	$361	$357	$389	$294	$338	[i]
Current Portion of Long-Term Debt	$64	$64	$100	$50	$40	$160	[j]
Net Working Capital	$169	$169	$148	$199	$180	$110	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$0	$0	$0	$0	$0	$9	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$1,107	$1,107	$769	$619	$610	$451	[n]
Book Value of Long-Term Debt	$1,170	$1,170	$869	$669	$650	$611	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($63)	($63)	($4)	$11	$14	$34	[p] = See Sources and Notes.
Imputed Debt	$140	$140	$106	$75	$89	$61	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$1,248	$1,248	$971	$755	$753	$705	[r] = [o] + [p] + [q].
Market Value of Debt	$1,248	$1,248	$971	$755	$753	$705	[s] = [r].
MARKET VALUE OF FIRM	$2,495	$2,585	$2,638	$2,238	$1,812	$1,735	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	49.94%	51.68%	63.13%	65.37%	57.24%	58.02%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.04%	0.04%	0.04%	0.90%	1.20%	1.35%	[v] = [g] / [t].
Debt - Market Value Ratio	50.02%	48.28%	36.83%	33.73%	41.55%	40.63%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel C: Consolidated Edison Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$9,698	$9,698	$9,076	$8,004	$7,310	$7,054	[a]
Shares Outstanding (in millions) - Common	274	274	272	257	245	243	[b]
Price per Share - Common	$38.13	$38.48	$48.60	$48.02	$46.73	$43.96	[c]
Market Value of Common Equity	$10,436	$10,534	$13,220	$12,362	$11,462	$10,662	[d] = [b] x [c].
Market to Book Value of Common Equity	1.08	1.09	1.46	1.54	1.57	1.51	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$213	$213	$213	$213	$213	$213	[f]
Market Value of Preferred Equity	$213	$213	$213	$213	$213	$213	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$3,319	$3,319	$2,550	$2,937	$3,072	$1,715	[h]
Current Liabilities	$3,205	$3,205	$3,851	$2,872	$3,321	$2,224	[i]
Current Portion of Long-Term Debt	$482	$482	$809	$374	$22	$469	[j]
Net Working Capital	$596	$596	($492)	$439	($227)	($40)	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$363	$363	$840	$117	$755	$156	[l]
Adjusted Short-Term Debt	$0	$0	$492	$0	$227	$40	[m] = See Sources and Notes.
Long-Term Debt	$9,249	$9,249	$7,633	$8,324	$7,428	$6,594	[n]
Book Value of Long-Term Debt	$9,731	$9,731	$8,934	$8,698	$7,677	$7,103	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$0	[p] = See Sources and Notes.
Imputed Debt	$3,144	$3,144	$844	$735	$1,063	$408	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$12,875	$12,875	$9,778	$9,433	$8,740	$7,511	[r] = [o] + [p] + [q].
Market Value of Debt	$12,875	$12,875	$9,778	$9,433	$8,740	$7,511	[s] = [r].
MARKET VALUE OF FIRM	$23,524	$23,622	$23,211	$22,008	$20,415	$18,386	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	44.36%	44.59%	56.96%	56.17%	56.15%	57.99%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.91%	0.90%	0.92%	0.97%	1.04%	1.16%	[v] = [g] / [t].
Debt - Market Value Ratio	54.73%	54.50%	42.13%	42.86%	42.81%	40.85%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel D: Empire District Electric Co/The

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$529	$529	$539	$469	$393	$379	[a]
Shares Outstanding (in millions) - Common	34	34	34	30	26	26	[b]
Price per Share - Common	$15.67	$17.10	$23.04	$24.80	$20.46	$22.77	[c]
Market Value of Common Equity	$533	$581	$774	$751	$534	$585	[d] = [b] x [c].
Market to Book Value of Common Equity	1.01	1.10	1.44	1.60	1.36	1.54	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$151	$151	$134	$132	$116	$90	[h]
Current Liabilities	$223	$223	$131	$150	$108	$58	[i]
Current Portion of Long-Term Debt	$20	$20	$0	$0	$0	$11	[j]
Net Working Capital	($51)	($51)	$3	($18)	$9	$42	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$102	$102	$33	$77	$31	$0	[l]
Adjusted Short-Term Debt	$51	$51	$0	$18	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$612	$612	$542	$462	$408	$400	[n]
Book Value of Long-Term Debt	$683	$683	$542	$480	$408	$411	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$0	$0	$0	$0	$0	$14	[p] = See Sources and Notes.
Imputed Debt	$148	$148	$118	$148	$276	$111	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$831	$831	$660	$629	$684	$536	[r] = [o] + [p] + [q].
Market Value of Debt	$831	$831	$660	$629	$684	$536	[s] = [r].
MARKET VALUE OF FIRM	$1,363	$1,412	$1,434	$1,380	$1,218	$1,121	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	39.07%	41.17%	53.98%	54.44%	43.81%	52.20%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	[v] = [g] / [t].
Debt - Market Value Ratio	60.93%	58.83%	46.02%	45.56%	56.19%	47.80%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel E: Entergy Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$7,967	$7,967	$7,863	$8,198	$7,748	$8,297	[a]
Shares Outstanding (in millions) - Common	189	189	193	203	208	217	[b]
Price per Share - Common	$68.82	$82.07	$119.71	$92.69	$69.02	$67.65	[c]
Market Value of Common Equity	$13,032	$15,540	$23,118	$18,786	$14,323	$14,669	[d] = [b] x [c].
Market to Book Value of Common Equity	1.64	1.95	2.94	2.29	1.85	1.77	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$311	$311	$311	$345	$446	$365	[f]
Market Value of Preferred Equity	$311	$311	$311	$345	$446	$365	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$5,160	$5,160	$3,958	$3,325	$4,063	$3,000	[h]
Current Liabilities	$3,766	$3,766	$3,257	$2,465	$3,112	$2,332	[i]
Current Portion of Long-Term Debt	$707	$707	$1,149	$335	$234	$626	[j]
Net Working Capital	$2,101	$2,101	$1,851	$1,195	$1,185	$1,294	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$55	$55	$25	$25	$40	$0	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$11,517	$11,517	$9,949	$8,997	$9,013	$7,180	[n]
Book Value of Long-Term Debt	$12,224	$12,224	$11,098	$9,331	$9,248	$7,807	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($1,601)	($1,601)	($1,373)	($692)	($815)	($403)	[p] = See Sources and Notes.
Imputed Debt	$1,717	$1,717	$1,231	$1,269	$1,472	$1,391	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$12,341	$12,341	$10,956	$9,909	$9,905	$8,796	[r] = [o] + [p] + [q].
Market Value of Debt	$12,341	$12,341	$10,956	$9,909	$9,905	$8,796	[s] = [r].
MARKET VALUE OF FIRM	$25,684	$28,191	$34,385	$29,040	$24,674	$23,830	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	50.74%	55.12%	67.23%	64.69%	58.05%	61.56%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	1.21%	1.10%	0.90%	1.19%	1.81%	1.53%	[v] = [g] / [t].
Debt - Market Value Ratio	48.05%	43.77%	31.86%	34.12%	40.14%	36.91%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel F: FirstEnergy Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$8,283	$8,283	$8,977	$9,035	$9,188	$8,590	[a]
Shares Outstanding (in millions) - Common	305	305	305	319	330	330	[b]
Price per Share - Common	$47.72	$46.91	$73.25	$60.70	$49.40	$39.63	[c]
Market Value of Common Equity	$14,548	$14,301	$22,329	$19,375	$16,294	$13,072	[d] = [b] x [c].
Market to Book Value of Common Equity	1.76	1.73	2.49	2.14	1.77	1.52	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$184	$335	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$184	$335	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$3,053	$3,053	$2,230	$2,083	$2,317	$2,012	[h]
Current Liabilities	$7,098	$7,098	$5,148	$5,255	$5,453	$3,308	[i]
Current Portion of Long-Term Debt	$2,476	$2,476	$2,014	$1,867	$2,043	$941	[j]
Net Working Capital	($1,569)	($1,569)	($904)	($1,305)	($1,093)	($355)	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$2,397	$2,397	$903	$1,108	$731	$170	[l]
Adjusted Short-Term Debt	$1,569	$1,569	$903	$1,108	$731	$170	[m] = See Sources and Notes.
Long-Term Debt	$9,100	$9,100	$8,869	$8,535	$8,155	$10,013	[n]
Book Value of Long-Term Debt	$13,145	$13,145	$11,786	$11,510	$10,929	$11,124	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($439)	($439)	$240	$406	$479	$554	[p] = See Sources and Notes.
Imputed Debt	$3,430	$3,430	$3,259	$2,391	$2,813	$2,847	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$16,136	$16,136	$15,285	$14,307	$14,221	$14,525	[r] = [o] + [p] + [q].
Market Value of Debt	$16,136	$16,136	$15,285	$14,307	$14,221	$14,525	[s] = [r].
MARKET VALUE OF FIRM	$30,684	$30,437	$37,614	$33,682	$30,699	$27,932	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	47.41%	46.99%	59.36%	57.52%	53.08%	46.80%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.60%	1.20%	[v] = [g] / [t].
Debt - Market Value Ratio	52.59%	53.01%	40.64%	42.48%	46.32%	52.00%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel G: IDACORP Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$1,302	$1,302	$1,207	$1,124	$1,025	$1,008	[a]
Shares Outstanding (in millions) - Common	47	47	45	44	43	42	[b]
Price per Share - Common	$25.58	$29.01	$35.48	$39.08	$29.52	$30.59	[c]
Market Value of Common Equity	$1,200	$1,361	$1,599	$1,716	$1,259	$1,292	[d] = [b] x [c].
Market to Book Value of Common Equity	0.92	1.05	1.32	1.53	1.23	1.28	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$266	$266	$267	$267	$298	$221	[h]
Current Liabilities	$396	$396	$375	$410	$294	$285	[i]
Current Portion of Long-Term Debt	$87	$87	$11	$95	$16	$79	[j]
Net Working Capital	($43)	($43)	($97)	($49)	$20	$15	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$151	$151	$186	$129	$60	$36	[l]
Adjusted Short-Term Debt	$43	$43	$97	$49	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$1,183	$1,183	$1,157	$929	$1,024	$980	[n]
Book Value of Long-Term Debt	$1,313	$1,313	$1,265	$1,072	$1,040	$1,058	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($77)	($77)	$177	($9)	$16	$23	[p] = See Sources and Notes.
Imputed Debt	$430	$430	$182	$306	$455	$277	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$1,665	$1,665	$1,624	$1,370	$1,510	$1,358	[r] = [o] + [p] + [q].
Market Value of Debt	$1,665	$1,665	$1,624	$1,370	$1,510	$1,358	[s] = [r].
MARKET VALUE OF FIRM	$2,865	$3,026	$3,223	$3,086	$2,770	$2,649	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	41.88%	44.98%	49.61%	55.60%	45.47%	48.75%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	[v] = [g] / [t].
Debt - Market Value Ratio	58.12%	55.02%	50.39%	44.40%	54.53%	51.25%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel H: MGE Energy Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$478	$478	$428	$375	$344	$338	[a]
Shares Outstanding (in millions) - Common	23	23	22	21	20	20	[b]
Price per Share - Common	$30.70	$32.18	$36.18	$36.44	$34.23	$36.07	[c]
Market Value of Common Equity	$703	$737	$794	$764	$700	$735	[d] = [b] x [c].
Market to Book Value of Common Equity	1.47	1.54	1.86	2.04	2.04	2.17	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$194	$194	$156	$149	$161	$144	[h]
Current Liabilities	$205	$205	$220	$144	$153	$118	[i]
Current Portion of Long-Term Debt	$0	$0	$30	$15	$0	$0	[j]
Net Working Capital	($11)	($11)	($34)	$21	$8	$26	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$125	$125	$104	$57	$83	$53	[l]
Adjusted Short-Term Debt	$11	$11	$34	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$272	$272	$232	$237	$222	$202	[n]
Book Value of Long-Term Debt	$284	$284	$297	$252	$222	$202	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($12)	($12)	($3)	$8	$13	$15	[p] = See Sources and Notes.
Imputed Debt	$139	$139	$89	$81	$98	$80	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$411	$411	$383	$342	$333	$297	[r] = [o] + [p] + [q].
Market Value of Debt	$411	$411	$383	$342	$333	$297	[s] = [r].
MARKET VALUE OF FIRM	$1,114	$1,148	$1,177	$1,106	$1,033	$1,033	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	63.14%	64.23%	67.45%	69.10%	67.75%	71.21%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	[v] = [g] / [t].
Debt - Market Value Ratio	36.86%	35.77%	32.55%	30.90%	32.25%	28.79%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel I: NSTAR

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$1,788	$1,788	$1,704	$1,583	$1,535	$1,441	[a]
Shares Outstanding (in millions) - Common	107	107	107	107	107	107	[b]
Price per Share - Common	$33.09	$35.78	$36.41	$34.54	$28.61	$27.05	[c]
Market Value of Common Equity	$3,534	$3,821	$3,888	$3,689	$3,055	$2,883	[d] = [b] x [c].
Market to Book Value of Common Equity	1.98	2.14	2.28	2.33	1.99	2.00	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$43	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$43	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$1,121	$1,121	$1,089	$959	$1,021	$798	[h]
Current Liabilities	$1,395	$1,395	$1,190	$1,272	$1,162	$898	[i]
Current Portion of Long-Term Debt	$98	$98	$99	$176	$123	$149	[j]
Net Working Capital	($176)	($176)	($3)	($137)	($18)	$49	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$583	$583	$403	$436	$418	$161	[l]
Adjusted Short-Term Debt	$176	$176	$3	$137	$18	$0	[m] = See Sources and Notes.
Long-Term Debt	$2,387	$2,387	$2,544	$2,404	$2,445	$2,101	[n]
Book Value of Long-Term Debt	$2,660	$2,660	$2,646	$2,717	$2,586	$2,251	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$33	$33	$80	$86	$117	$233	[p] = See Sources and Notes.
Imputed Debt	$542	$542	$239	$264	$306	$383	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$3,235	$3,235	$2,965	$3,067	$3,009	$2,867	[r] = [o] + [p] + [q].
Market Value of Debt	$3,235	$3,235	$2,965	$3,067	$3,009	$2,867	[s] = [r].
MARKET VALUE OF FIRM	$6,769	$7,057	$6,854	$6,755	$6,064	$5,792	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	52.21%	54.15%	56.74%	54.60%	50.38%	49.77%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.74%	[v] = [g] / [t].
Debt - Market Value Ratio	47.79%	45.85%	43.26%	45.40%	49.62%	49.49%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel J: Otter Tail Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$677	$677	$524	$492	$466	$431	[a]
Shares Outstanding (in millions) - Common	35	35	30	30	29	29	[b]
Price per Share - Common	$19.12	$23.04	$35.91	$31.41	$29.23	$25.32	[c]
Market Value of Common Equity	$675	$814	$1,072	$927	$859	$734	[d] = [b] x [c].
Market to Book Value of Common Equity	1.00	1.20	2.05	1.88	1.85	1.70	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$16	$16	$16	$16	$16	$16	[f]
Market Value of Preferred Equity	$16	$16	$16	$16	$16	$16	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$393	$393	$401	$335	$305	$276	[h]
Current Liabilities	$305	$305	$294	$215	$187	$182	[i]
Current Portion of Long-Term Debt	$4	$4	$3	$3	$3	$6	[j]
Net Working Capital	$92	$92	$110	$123	$122	$100	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$135	$135	$95	$39	$16	$40	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$340	$340	$343	$255	$258	$262	[n]
Book Value of Long-Term Debt	$343	$343	$346	$259	$262	$268	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($31)	($31)	$12	$10	$15	$29	[p] = See Sources and Notes.
Imputed Debt	$187	$187	$167	$180	$179	$151	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$499	$499	$524	$449	$456	$448	[r] = [o] + [p] + [q].
Market Value of Debt	$499	$499	$524	$449	$456	$448	[s] = [r].
MARKET VALUE OF FIRM	$1,190	$1,329	$1,612	$1,392	$1,331	$1,198	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	56.73%	61.24%	66.52%	66.62%	64.58%	61.26%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	1.30%	1.17%	0.96%	1.11%	1.16%	1.29%	[v] = [g] / [t].
Debt - Market Value Ratio	41.97%	37.59%	32.52%	32.27%	34.25%	37.45%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel K: Pepco Holdings Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$4,190	$4,190	$4,018	$3,612	$3,584	$3,339	[a]
Shares Outstanding (in millions) - Common	219	219	201	192	190	188	[b]
Price per Share - Common	$16.44	$17.22	$29.65	$26.31	$22.37	$21.40	[c]
Market Value of Common Equity	$3,599	$3,770	$5,946	$5,049	$4,246	$4,031	[d] = [b] x [c].
Market to Book Value of Common Equity	0.86	0.90	1.48	1.40	1.18	1.21	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$55	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$55	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$2,626	$2,626	$1,997	$1,981	$2,098	$1,673	[h]
Current Liabilities	$2,030	$2,030	$2,041	$2,527	$2,418	$1,940	[i]
Current Portion of Long-Term Debt	$91	$91	$338	$863	$475	$521	[j]
Net Working Capital	$687	$687	$295	$318	$155	$253	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$465	$465	$289	$350	$156	$320	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$5,378	$5,378	$4,735	$4,367	$4,839	$5,073	[n]
Book Value of Long-Term Debt	$5,469	$5,469	$5,073	$5,230	$5,314	$5,594	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($173)	($173)	($17)	$39	$105	$213	[p] = See Sources and Notes.
Imputed Debt	$1,082	$1,082	$589	$639	$728	$692	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$6,378	$6,378	$5,645	$5,908	$6,147	$6,499	[r] = [o] + [p] + [q].
Market Value of Debt	$6,378	$6,378	$5,645	$5,908	$6,147	$6,499	[s] = [r].
MARKET VALUE OF FIRM	$9,976	$10,148	$11,591	$10,957	$10,393	$10,585	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	36.07%	37.15%	51.30%	46.08%	40.85%	38.08%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.52%	[v] = [g] / [t].
Debt - Market Value Ratio	63.93%	62.85%	48.70%	53.92%	59.15%	61.40%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel L: Pinnacle West Capital Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$3,446	$3,446	$3,532	$3,446	$3,425	$2,950	[a]
Shares Outstanding (in millions) - Common	101	101	100	100	99	92	[b]
Price per Share - Common	$29.74	$31.36	$42.73	$50.63	$42.00	$44.36	[c]
Market Value of Common Equity	$3,000	$3,164	$4,294	$5,061	$4,160	$4,072	[d] = [b] x [c].
Market to Book Value of Common Equity	0.87	0.92	1.22	1.47	1.21	1.38	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[f]
Market Value of Preferred Equity	$0	$0	$0	$0	$0	$0	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$882	$882	$907	$1,475	$1,891	$1,137	[h]
Current Liabilities	$1,506	$1,506	$1,344	$1,459	$2,272	$1,626	[i]
Current Portion of Long-Term Debt	$178	$178	$164	$2	$385	$617	[j]
Net Working Capital	($446)	($446)	($274)	$18	$4	$128	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$670	$670	$341	$36	$16	$71	[l]
Adjusted Short-Term Debt	$446	$446	$274	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$3,032	$3,032	$3,127	$3,233	$2,608	$2,585	[n]
Book Value of Long-Term Debt	$3,655	$3,655	$3,565	$3,234	$2,993	$3,202	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($400)	($400)	($90)	($40)	$10	$110	[p] = See Sources and Notes.
Imputed Debt	$1,390	$1,390	$1,055	$1,094	$1,113	$1,003	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$4,645	$4,645	$4,530	$4,288	$4,116	$4,315	[r] = [o] + [p] + [q].
Market Value of Debt	$4,645	$4,645	$4,530	$4,288	$4,116	$4,315	[s] = [r].
MARKET VALUE OF FIRM	$7,645	$7,808	$8,823	$9,349	$8,276	$8,387	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	39.24%	40.52%	48.66%	54.14%	50.27%	48.55%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	[v] = [g] / [t].
Debt - Market Value Ratio	60.76%	59.48%	51.34%	45.86%	49.73%	51.45%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel M: PPL Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$5,077	$5,077	$5,556	$5,122	$4,418	$4,239	[a]
Shares Outstanding (in millions) - Common	375	375	373	381	380	378	[b]
Price per Share - Common	$29.74	$29.72	$52.13	$35.98	$29.70	$26.68	[c]
Market Value of Common Equity	$11,153	$11,145	$19,464	$13,701	$11,291	$10,088	[d] = [b] x [c].
Market to Book Value of Common Equity	2.20	2.20	3.50	2.67	2.56	2.38	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$301	$301	$301	$301	$51	$51	[f]
Market Value of Preferred Equity	$301	$301	$301	$301	$51	$51	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$4,383	$4,383	$3,168	$3,630	$2,906	$2,276	[h]
Current Liabilities	$4,293	$4,293	$2,882	$3,348	$3,354	$2,295	[i]
Current Portion of Long-Term Debt	$687	$687	$678	$1,107	$1,126	$866	[j]
Net Working Capital	$777	$777	$964	$1,389	$678	$847	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$679	$679	$92	$42	$214	$42	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$7,151	$7,151	$6,890	$6,728	$6,044	$6,881	[n]
Book Value of Long-Term Debt	$7,838	$7,838	$7,568	$7,835	$7,170	$7,747	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($1,053)	($1,053)	$86	$123	$504	$483	[p] = See Sources and Notes.
Imputed Debt	$2,262	$2,262	$1,212	$1,374	$1,524	$1,423	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$9,047	$9,047	$8,866	$9,332	$9,198	$9,653	[r] = [o] + [p] + [q].
Market Value of Debt	$9,047	$9,047	$8,866	$9,332	$9,198	$9,653	[s] = [r].
MARKET VALUE OF FIRM	$20,500	$20,493	$28,631	$23,334	$20,540	$19,793	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	54.40%	54.39%	67.98%	58.72%	54.97%	50.97%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	1.47%	1.47%	1.05%	1.29%	0.25%	0.26%	[v] = [g] / [t].
Debt - Market Value Ratio	44.13%	44.15%	30.97%	39.99%	44.78%	48.77%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel N: Progress Energy Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$8,687	$8,687	$8,395	$8,286	$8,038	$7,633	[a]
Shares Outstanding (in millions) - Common	264	264	260	256	252	247	[b]
Price per Share - Common	$37.31	$39.04	$48.80	$49.16	$44.22	$45.18	[c]
Market Value of Common Equity	$9,850	$10,307	$12,687	$12,586	$11,143	$11,159	[d] = [b] x [c].
Market to Book Value of Common Equity	1.13	1.19	1.51	1.52	1.39	1.46	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$93	$93	$93	$93	$93	$93	[f]
Market Value of Preferred Equity	$93	$93	$93	$93	$93	$93	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$3,520	$3,520	$2,802	$3,614	$6,007	$3,032	[h]
Current Liabilities	$3,486	$3,486	$3,302	$2,820	$3,049	$3,083	[i]
Current Portion of Long-Term Debt	$877	$877	$877	$324	$513	$349	[j]
Net Working Capital	$911	$911	$377	$1,118	$3,471	$298	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$1,050	$1,050	$201	$0	$175	$684	[l]
Adjusted Short-Term Debt	$0	$0	$0	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$10,890	$10,890	$8,976	$8,905	$10,446	$9,521	[n]
Book Value of Long-Term Debt	$11,767	$11,767	$9,853	$9,229	$10,959	$9,870	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$601	$601	$283	$384	$532	$973	[p] = See Sources and Notes.
Imputed Debt	$2,606	$2,606	$1,614	$1,912	$2,209	$1,926	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$14,974	$14,974	$11,750	$11,525	$13,700	$12,769	[r] = [o] + [p] + [q].
Market Value of Debt	$14,974	$14,974	$11,750	$11,525	$13,700	$12,769	[s] = [r].
MARKET VALUE OF FIRM	$24,918	$25,374	$24,530	$24,204	$24,936	$24,022	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	39.53%	40.62%	51.72%	52.00%	44.69%	46.46%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.37%	0.37%	0.38%	0.38%	0.37%	0.39%	[v] = [g] / [t].
Debt - Market Value Ratio	60.09%	59.01%	47.90%	47.62%	54.94%	53.16%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel O: SCANA Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$3,045	$3,045	$2,847	$2,846	$2,677	$2,451	[a]
Shares Outstanding (in millions) - Common	117	117	117	117	115	113	[b]
Price per Share - Common	$31.90	$35.65	$42.55	$40.98	$39.56	$39.42	[c]
Market Value of Common Equity	$3,732	$4,171	$4,979	$4,781	$4,550	$4,454	[d] = [b] x [c].
Market to Book Value of Common Equity	1.23	1.37	1.75	1.68	1.70	1.82	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$106	$106	$113	$114	$106	$106	[f]
Market Value of Preferred Equity	$106	$106	$113	$114	$106	$106	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$1,836	$1,836	$1,301	$1,376	$1,464	$1,182	[h]
Current Liabilities	$1,155	$1,155	$1,721	$1,405	$1,500	$1,184	[i]
Current Portion of Long-Term Debt	$144	$144	$233	$43	$188	$204	[j]
Net Working Capital	$825	$825	($187)	$14	$152	$202	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$80	$80	$627	$487	$427	$211	[l]
Adjusted Short-Term Debt	$0	$0	$187	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$4,368	$4,368	$2,879	$3,067	$2,956	$3,195	[n]
Book Value of Long-Term Debt	$4,512	$4,512	$3,299	$3,110	$3,144	$3,399	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$86	$86	$54	$47	$88	$310	[p] = See Sources and Notes.
Imputed Debt	$220	$220	$31	$56	$84	$61	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$4,818	$4,818	$3,385	$3,213	$3,316	$3,770	[r] = [o] + [p] + [q].
Market Value of Debt	$4,818	$4,818	$3,385	$3,213	$3,316	$3,770	[s] = [r].
MARKET VALUE OF FIRM	$8,656	$9,095	$8,476	$8,108	$7,972	$8,330	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	43.11%	45.86%	58.74%	58.97%	57.07%	53.47%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	1.22%	1.17%	1.33%	1.41%	1.33%	1.27%	[v] = [g] / [t].
Debt - Market Value Ratio	55.66%	52.98%	39.93%	39.62%	41.60%	45.26%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel P: Southern Co

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$13,276	$13,276	$12,385	$11,371	$10,689	$10,278	[a]
Shares Outstanding (in millions) - Common	778	778	764	746	742	742	[b]
Price per Share - Common	$31.01	$36.28	$39.00	$36.99	$34.90	$33.62	[c]
Market Value of Common Equity	$24,113	$28,213	$29,783	$27,609	$25,879	$24,939	[d] = [b] x [c].
Market to Book Value of Common Equity	1.82	2.13	2.40	2.43	2.42	2.43	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$1,082	$1,082	$1,080	$744	$596	$561	[f]
Market Value of Preferred Equity	$1,082	$1,082	$1,080	$744	$596	$561	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$5,358	$5,358	$4,732	$4,019	$4,205	$3,491	[h]
Current Liabilities	$5,226	$5,226	$5,631	$6,353	$5,240	$3,798	[i]
Current Portion of Long-Term Debt	$617	$617	$1,178	$1,418	$901	$983	[j]
Net Working Capital	$749	$749	$279	($916)	($134)	$676	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$953	$953	$1,272	$1,941	$1,258	$426	[l]
Adjusted Short-Term Debt	$0	$0	$0	$916	$134	$0	[m] = See Sources and Notes.
Long-Term Debt	$16,816	$16,816	$14,143	$12,503	$12,846	$12,449	[n]
Book Value of Long-Term Debt	$17,433	$17,433	$15,321	$14,837	$13,881	$13,432	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($213)	($213)	($164)	($122)	$10	$243	[p] = See Sources and Notes.
Imputed Debt	$2,391	$2,391	$1,075	$920	$1,168	$1,303	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$19,611	$19,611	$16,232	$15,635	$15,059	$14,978	[r] = [o] + [p] + [q].
Market Value of Debt	$19,611	$19,611	$16,232	$15,635	$15,059	$14,978	[s] = [r].
MARKET VALUE OF FIRM	$44,805	$48,905	$47,096	$43,988	$41,534	$40,479	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	53.82%	57.69%	63.24%	62.77%	62.31%	61.61%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	2.41%	2.21%	2.29%	1.69%	1.43%	1.39%	[v] = [g] / [t].
Debt - Market Value Ratio	43.77%	40.10%	34.47%	35.54%	36.26%	37.00%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel Q: Wisconsin Energy Corp

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$3,337	$3,337	$3,099	$2,889	$2,680	$2,492	[a]
Shares Outstanding (in millions) - Common	117	117	117	117	117	118	[b]
Price per Share - Common	$42.02	$41.62	$49.12	$47.64	$39.07	$33.86	[c]
Market Value of Common Equity	$4,913	$4,867	$5,744	$5,572	$4,570	$3,986	[d] = [b] x [c].
Market to Book Value of Common Equity	1.47	1.46	1.85	1.93	1.71	1.60	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$30	$30	$30	$30	$30	$30	[f]
Market Value of Preferred Equity	$30	$30	$30	$30	$30	$30	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$1,693	$1,693	$1,850	$1,228	$1,377	$1,221	[h]
Current Liabilities	$1,735	$1,735	$2,503	$1,888	$1,647	$992	[i]
Current Portion of Long-Term Debt	$62	$62	$353	$297	$496	$101	[j]
Net Working Capital	$20	$20	($300)	($363)	$226	$329	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$602	$602	$901	$912	$456	$338	[l]
Adjusted Short-Term Debt	$0	$0	$300	$363	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$4,075	$4,075	$3,173	$3,073	$3,031	$3,240	[n]
Book Value of Long-Term Debt	$4,137	$4,137	$3,826	$3,733	$3,527	$3,341	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	($298)	($298)	($81)	$10	$65	$146	[p] = See Sources and Notes.
Imputed Debt	$812	$812	$589	$373	$455	$356	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$4,651	$4,651	$4,333	$4,116	$4,047	$3,842	[r] = [o] + [p] + [q].
Market Value of Debt	$4,651	$4,651	$4,333	$4,116	$4,047	$3,842	[s] = [r].
MARKET VALUE OF FIRM	$9,595	$9,548	$10,108	$9,719	$8,648	$7,858	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	51.21%	50.97%	56.83%	57.34%	52.85%	50.72%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.32%	0.32%	0.30%	0.31%	0.35%	0.39%	[v] = [g] / [t].
Debt - Market Value Ratio	48.47%	48.71%	42.87%	42.35%	46.80%	48.89%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-3

Market Value of the US Electric Sample (Including Imputed Debt)

Panel R: Xcel Energy Inc

($MM)

	DCF Capital Structure	Year End, 2008	Year End, 2007	Year End, 2006	Year End, 2005	Year End, 2004	Notes
MARKET VALUE OF COMMON EQUITY							
Book Value, Common Shareholder's Equity	$6,964	$6,964	$6,301	$5,817	$5,395	$5,203	[a]
Shares Outstanding (in millions) - Common	454	454	429	407	403	400	[b]
Price per Share - Common	$17.86	$18.12	$22.76	$23.15	$18.72	$18.29	[c]
Market Value of Common Equity	$8,105	$8,223	$9,760	$9,430	$7,551	$7,324	[d] = [b] x [c].
Market to Book Value of Common Equity	1.16	1.18	1.55	1.62	1.40	1.41	[e] = [d] / [a].
MARKET VALUE OF PREFERRED EQUITY							
Book Value of Preferred Equity	$105	$105	$105	$105	$105	$105	[f]
Market Value of Preferred Equity	$105	$105	$105	$105	$105	$105	[g] = [f].
MARKET VALUE OF DEBT							
Current Assets	$3,016	$3,016	$2,807	$2,634	$3,142	$2,571	[h]
Current Liabilities	$3,046	$3,046	$3,641	$2,865	$3,673	$2,336	[i]
Current Portion of Long-Term Debt	$559	$559	$638	$336	$835	$224	[j]
Net Working Capital	$528	$528	($196)	$105	$305	$459	[k] = [h] - ([i] - [j]).
Notes Payable (Short-Term Debt)	$455	$455	$1,089	$626	$746	$312	[l]
Adjusted Short-Term Debt	$0	$0	$196	$0	$0	$0	[m] = See Sources and Notes.
Long-Term Debt	$7,732	$7,732	$6,342	$6,450	$5,898	$6,493	[n]
Book Value of Long-Term Debt	$8,290	$8,290	$7,176	$6,786	$6,733	$6,717	[o] = [n] + [j] + [m].
Adjustment to Book Value of Long-Term Debt	$272	$272	$290	$538	$512	$675	[p] = See Sources and Notes.
Imputed Debt	$1,911	$1,911	$1,870	$1,304	$1,305	$1,256	[q] = See Sources and Notes.
Market Value of Long-Term Debt	$10,473	$10,473	$9,335	$8,629	$8,550	$8,648	[r] = [o] + [p] + [q].
Market Value of Debt	$10,473	$10,473	$9,335	$8,629	$8,550	$8,648	[s] = [r].
MARKET VALUE OF FIRM	$18,683	$18,801	$19,200	$18,163	$16,206	$16,077	[t] = [d] + [g] + [s].
DEBT AND EQUITY TO MARKET VALUE RATIOS							
Common Equity - Market Value Ratio	43.38%	43.74%	50.83%	51.92%	46.59%	45.56%	[u] = [d] / [t].
Preferred Equity - Market Value Ratio	0.56%	0.56%	0.55%	0.58%	0.65%	0.65%	[v] = [g] / [t].
Debt - Market Value Ratio	56.06%	55.71%	48.62%	47.51%	52.76%	53.79%	[w] = [s] / [t].

Sources and Notes:
Bloomberg as of March 02, 2009
Capital structure from Year End, 2008 calculated using respective balance sheet information and 5-day average prices ending at period end.
The DCF Capital structure is calculated using 4th Quarter, 2008 balance sheet information and a 15-trading day average closing price ending on 3/2/2009.
Prices are reported in Workpaper #1 to Table No. MJV-6.
[m] =
(1): 0 if [k] > 0.
(2): The absolute value of [k] if [k] < 0 and |[k]| < [l].
(3): [l] if [k] < 0 and |[k]| > [l].
[p]: Difference between fair value of Long-Term debt and carrying amount of Long-Term debt per company 10-K. Data for adjustment are from companies' annual reports (2004-2008).
[q]: Data for imputed debt estimates are from companies' annual reports (2004-2008).

Table No. MJV-4

US Electric Sample (Including Imputed Debt)

Capital Structure Summary

Company	DCF Capital Structure			5-Year Average Capital Structure		
	Common Equity - Value Ratio [1]	Preferred Equity - Value Ratio [2]	Debt - Value Ratio [3]	Common Equity - Value Ratio [4]	Preferred Equity - Value Ratio [5]	Debt - Value Ratio [6]
American Electric Power Co Inc	0.37	0.00	0.63	0.48	0.00	0.52
Cleco Corp	0.50	0.00	0.50	0.59	0.01	0.40
Consolidated Edison Inc	0.44	0.01	0.55	0.54	0.01	0.45
Empire District Electric Co/The	0.39	0.00	0.61	0.49	0.00	0.51
Entergy Corp	0.51	0.01	0.48	0.61	0.01	0.37
FirstEnergy Corp	0.47	0.00	0.53	0.53	0.00	0.47
IDACORP Inc	0.42	0.00	0.58	0.49	0.00	0.51
MGE Energy Inc	0.63	0.00	0.37	0.68	0.00	0.32
NSTAR	0.52	0.00	0.48	0.53	0.00	0.47
Otter Tail Corp	0.57	0.01	0.42	0.64	0.01	0.35
Pepco Holdings Inc	0.36	0.00	0.64	0.43	0.00	0.57
Pinnacle West Capital Corp	0.39	0.00	0.61	0.48	0.00	0.52
PPL Corp	0.54	0.01	0.44	0.57	0.01	0.42
Progress Energy Inc	0.40	0.00	0.60	0.47	0.00	0.53
SCANA Corp	0.43	0.01	0.56	0.55	0.01	0.44
Southern Co	0.54	0.02	0.44	0.62	0.02	0.37
Wisconsin Energy Corp	0.51	0.00	0.48	0.54	0.00	0.46
Xcel Energy Inc	0.43	0.01	0.56	0.48	0.01	0.52
Average	0.47	0.01	0.53	0.54	0.01	0.45

Sources and Notes:
[1], [4]:Workpaper #1 to Table No. MJV-4.
[2], [5]:Workpaper #2 to Table No. MJV-4.
[3], [6]:Workpaper #3 to Table No. MJV-4.
Values in this table may not add up exactly to 1.0 because of rounding.

Workpaper #1 to Table No. MJV-4

US Electric Sample (Including Imputed Debt)

Calculation of the Average Common Equity - Market Value Ratio

Company	DCF Capital Structure [1]	Year End, 2008 [2]	2007 [3]	2006 [4]	2005 [5]	2004 [6]	5-Year Average [7]
American Electric Power Co Inc	0.37	0.39	0.51	0.51	0.50	0.48	0.48
Cleco Corp	0.50	0.52	0.63	0.65	0.57	0.58	0.59
Consolidated Edison Inc	0.44	0.45	0.57	0.56	0.56	0.58	0.54
Empire District Electric Co/The	0.39	0.41	0.54	0.54	0.44	0.52	0.49
Entergy Corp	0.51	0.55	0.67	0.65	0.58	0.62	0.61
FirstEnergy Corp	0.47	0.47	0.59	0.58	0.53	0.47	0.53
IDACORP Inc	0.42	0.45	0.50	0.56	0.45	0.49	0.49
MGE Energy Inc	0.63	0.64	0.67	0.69	0.68	0.71	0.68
NSTAR	0.52	0.54	0.57	0.55	0.50	0.50	0.53
Otter Tail Corp	0.57	0.61	0.67	0.67	0.65	0.61	0.64
Pepco Holdings Inc	0.36	0.37	0.51	0.46	0.41	0.38	0.43
Pinnacle West Capital Corp	0.39	0.41	0.49	0.54	0.50	0.49	0.48
PPL Corp	0.54	0.54	0.68	0.59	0.55	0.51	0.57
Progress Energy Inc	0.40	0.41	0.52	0.52	0.45	0.46	0.47
SCANA Corp	0.43	0.46	0.59	0.59	0.57	0.53	0.55
Southern Co	0.54	0.58	0.63	0.63	0.62	0.62	0.62
Wisconsin Energy Corp	0.51	0.51	0.57	0.57	0.53	0.51	0.54
Xcel Energy Inc	0.43	0.44	0.51	0.52	0.47	0.46	0.48

Sources and Notes:
[1] - [6]: Table No. MJV-3; Panels A - R, [t].
[7]: { ([2] + [3] + [4] + [5] + [6]) / 5 }

Workpaper #2 to Table No. MJV-4

US Electric Sample (Including Imputed Debt)

Calculation of the Average Preferred Equity - Market Value Ratio

Company	DCF Capital Structure [1]	Year End, 2008 [2]	2007 [3]	2006 [4]	2005 [5]	2004 [6]	5-Year Average [7]
American Electric Power Co Inc	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cleco Corp	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Consolidated Edison Inc	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Empire District Electric Co/The	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entergy Corp	0.01	0.01	0.01	0.01	0.02	0.02	0.01
FirstEnergy Corp	0.00	0.00	0.00	0.00	0.01	0.01	0.00
IDACORP Inc	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MGE Energy Inc	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NSTAR	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Otter Tail Corp	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Pepco Holdings Inc	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Pinnacle West Capital Corp	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PPL Corp	0.01	0.01	0.01	0.01	0.00	0.00	0.01
Progress Energy Inc	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCANA Corp	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Southern Co	0.02	0.02	0.02	0.02	0.01	0.01	0.02
Wisconsin Energy Corp	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xcel Energy Inc	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Sources and Notes:
[1] - [6]: Table No. MJV-3; Panels A - R, [u].
[7]: { ([2] + [3] + [4] + [5] + [6]) / 5 }

Workpaper #3 to Table No. MJV-4

US Electric Sample (Including Imputed Debt)

Calculation of the Average Debt - Market Value Ratio

Company	DCF Capital Structure [1]	Year End, 2008 [2]	2007 [3]	2006 [4]	2005 [5]	2004 [6]	5-Year Average [7]
American Electric Power Co Inc	0.63	0.61	0.48	0.49	0.50	0.52	0.52
Cleco Corp	0.50	0.48	0.37	0.34	0.42	0.41	0.40
Consolidated Edison Inc	0.55	0.55	0.42	0.43	0.43	0.41	0.45
Empire District Electric Co/The	0.61	0.59	0.46	0.46	0.56	0.48	0.51
Entergy Corp	0.48	0.44	0.32	0.34	0.40	0.37	0.37
FirstEnergy Corp	0.53	0.53	0.41	0.42	0.46	0.52	0.47
IDACORP Inc	0.58	0.55	0.50	0.44	0.55	0.51	0.51
MGE Energy Inc	0.37	0.36	0.33	0.31	0.32	0.29	0.32
NSTAR	0.48	0.46	0.43	0.45	0.50	0.49	0.47
Otter Tail Corp	0.42	0.38	0.33	0.32	0.34	0.37	0.35
Pepco Holdings Inc	0.64	0.63	0.49	0.54	0.59	0.61	0.57
Pinnacle West Capital Corp	0.61	0.59	0.51	0.46	0.50	0.51	0.52
PPL Corp	0.44	0.44	0.31	0.40	0.45	0.49	0.42
Progress Energy Inc	0.60	0.59	0.48	0.48	0.55	0.53	0.53
SCANA Corp	0.56	0.53	0.40	0.40	0.42	0.45	0.44
Southern Co	0.44	0.40	0.34	0.36	0.36	0.37	0.37
Wisconsin Energy Corp	0.48	0.49	0.43	0.42	0.47	0.49	0.46
Xcel Energy Inc	0.56	0.56	0.49	0.48	0.53	0.54	0.52

Sources and Notes:
[1] - [6]: Table No. MJV-3; Panels A - R, [v].
[7]: { ([2] + [3] + [4] + [5] + [6]) / 5 }

Table No. MJV-5

US Electric Sample

Combined Bloomberg Estimated and Value Line Estimated Growth Rates

Company	Bloomberg Estimate		Value Line			Combined BEst and Value Line Growth Rate
	BEst Long-Term Growth Rate	Number of Estimates	EPS Year 2008 Estimate or Year 2009 Estimate	EPS Year 2011 - 2013 Estimate or Year 2012 - 2014 Estimate	Annualized Growth Rate	
	[1]	[2]	[3]	[4]	[5]	[6]
American Electric Power Co Inc	4.8%	3	$2.95	$3.75	6.2%	5.2%
Cleco Corp	14.8%	3	$1.65	$2.50	10.9%	13.8%
Consolidated Edison Inc	4.0%	4	$3.20	$3.80	4.4%	4.1%
Empire District Electric Co/The	n/a	n/a	$1.25	$2.00	12.5%	12.5%
Entergy Corp	7.0%	5	$6.65	$8.00	4.7%	6.6%
FirstEnergy Corp	7.5%	2	$4.75	$7.00	10.2%	8.4%
IDACORP Inc	5.0%	2	$2.25	$2.65	4.2%	4.7%
MGE Energy Inc	n/a	n/a	$2.45	$2.75	2.9%	2.9%
NSTAR	6.0%	3	$2.40	$3.25	7.9%	6.5%
Otter Tail Corp	5.4%	2	$1.10	$2.00	16.1%	9.0%
Pepco Holdings Inc	4.7%	3	$1.90	$2.75	9.7%	5.9%
Pinnacle West Capital Corp	4.7%	3	$2.80	$3.00	1.7%	3.9%
PPL Corp	10.3%	4	$1.80	$4.50	25.7%	13.3%
Progress Energy Inc	4.6%	5	$3.10	$3.50	3.1%	4.3%
SCANA Corp	4.5%	3	$2.85	$3.50	5.3%	4.7%
Southern Co	5.4%	5	$2.35	$3.00	6.3%	5.5%
Wisconsin Energy Corp	9.3%	6	$2.90	$4.25	10.0%	9.4%
Xcel Energy Inc	5.5%	4	$1.46	$2.00	8.2%	6.0%

Sources and Notes:
[1] - [2]: Bloomberg as of March 02, 2009.
[3] - [4]: Most recent Value Line Plus Edition, dated December 26, 2008, February 6, 2009, and February 27, 2009.
For Consolidated Edison Inc, FirstEnergy Corp, NSTAR,PPL Corp, Pepco Holdings Inc, Progress Energy Inc, SCANA Corp, and Southern Co: Using EPS Year 2009 Estimate and EPS Year 2012 - 2014 Estimate.
For other companies: Using EPS Year 2008 and EPS Year 2011 - 2013 Estimate.
[5]: ([4] / [3]) ^ (1/4) - 1.
[6]: ([1] x [2] + [5]) / ([2] + 1).

Table No. MJV-6

DCF Cost of Equity of the US Electric Sample

Panel A: Simple DCF Method (Quarterly)

Company	Stock Price [1]	Most Recent Dividend [2]	Quarterly Dividend Yield [3]	Combined BEst and Value Line Long-Term Growth Rate [4]	Quarterly Growth Rate [5]	DCF Cost of Equity [6]
American Electric Power Co Inc	$30.02	$0.41	1.37%	5.2%	1.3%	11.0%
Cleco Corp	$20.77	$0.23	1.08%	13.8%	3.3%	18.8%
Consolidated Edison Inc	$38.13	$0.59	1.55%	4.1%	1.0%	10.7%
Empire District Electric Co/The	$15.67	$0.32	2.04%	12.5%	3.0%	21.9%
Entergy Corp	$68.82	$0.75	1.09%	6.6%	1.6%	11.3%
FirstEnergy Corp	$47.72	$0.55	1.15%	8.4%	2.0%	13.5%
IDACORP Inc	$25.58	$0.30	1.17%	4.7%	1.2%	9.7%
MGE Energy Inc	$30.70	$0.36	1.18%	2.9%	0.7%	7.9%
NSTAR	$33.09	$0.38	1.13%	6.5%	1.6%	11.4%
Otter Tail Corp	$19.12	$0.30	1.56%	9.0%	2.2%	15.9%
Pepco Holdings Inc	$16.44	$0.27	1.64%	5.9%	1.4%	13.1%
Pinnacle West Capital Corp	$29.74	$0.53	1.77%	3.9%	1.0%	11.5%
PPL Corp	$29.74	$0.34	1.13%	13.3%	3.2%	18.5%
Progress Energy Inc	$37.31	$0.62	1.66%	4.3%	1.1%	11.5%
SCANA Corp	$31.90	$0.46	1.44%	4.7%	1.2%	10.9%
Southern Co	$31.01	$0.42	1.35%	5.5%	1.4%	11.4%
Wisconsin Energy Corp	$42.02	$0.34	0.80%	9.4%	2.3%	12.9%
Xcel Energy Inc	$17.86	$0.24	1.33%	6.0%	1.5%	11.8%

Sources and Notes:
[1]: Workpaper #1 to Table No. MJV-6.
[2]: Workpaper #2 to Table No. MJV-6.
[3]: [2] / [1].
[4]: Table No. MJV-5, [6].
[5]: {(1 + [4]) ^ (1/4)} - 1.
[6]: {(([2] / [1]) x (1 + [5]) + [5] + 1) ^ 4} - 1.

Table No. MJV-6

DCF Cost of Equity of the US Electric Sample

Panel B: Multi-Stage DCF (Using Blue Chip Long-Term GDP Growth Forecast as the Perpetual Rate)

Company	Stock Price [1]	Most Recent Dividend [2]	Combined BEst and *Value Line* Long-Term Growth Rate [3]	Growth Rate: Year 6 [4]	Growth Rate: Year 7 [5]	Growth Rate: Year 8 [6]	Growth Rate: Year 9 [7]	Growth Rate: Year 10 [8]	GDP Long-Term Growth Rate [9]	DCF Cost of Equity [10]
American Electric Power Co Inc	$30.02	$0.41	5.2%	5.1%	5.1%	5.0%	5.0%	4.9%	4.9%	10.8%
Cleco Corp	$20.77	$0.23	13.8%	12.3%	10.8%	9.4%	7.9%	6.4%	4.9%	12.5%
Consolidated Edison Inc	$38.13	$0.59	4.1%	4.2%	4.4%	4.5%	4.6%	4.8%	4.9%	11.2%
Empire District Electric Co/The	$15.67	$0.32	12.5%	11.2%	9.9%	8.7%	7.4%	6.2%	4.9%	17.8%
Entergy Corp	$68.82	$0.75	6.6%	6.3%	6.0%	5.8%	5.5%	5.2%	4.9%	10.1%
FirstEnergy Corp	$47.72	$0.55	8.4%	7.8%	7.2%	6.6%	6.1%	5.5%	4.9%	11.0%
IDACORP Inc	$25.58	$0.30	4.7%	4.8%	4.8%	4.8%	4.8%	4.9%	4.9%	9.9%
MGE Energy Inc	$30.70	$0.36	2.9%	3.3%	3.6%	3.9%	4.2%	4.6%	4.9%	9.3%
NSTAR	$33.09	$0.38	6.5%	6.2%	5.9%	5.7%	5.4%	5.2%	4.9%	10.2%
Otter Tail Corp	$19.12	$0.30	9.0%	8.3%	7.6%	6.9%	6.3%	5.6%	4.9%	13.3%
Pepco Holdings Inc	$16.44	$0.27	5.9%	5.8%	5.6%	5.4%	5.2%	5.1%	4.9%	12.4%
Pinnacle West Capital Corp	$29.74	$0.53	3.9%	4.1%	4.3%	4.4%	4.6%	4.7%	4.9%	12.1%
PPL Corp	$29.74	$0.34	13.3%	11.9%	10.5%	9.1%	7.7%	6.3%	4.9%	12.4%
Progress Energy Inc	$37.31	$0.62	4.3%	4.4%	4.5%	4.6%	4.7%	4.8%	4.9%	11.8%
SCANA Corp	$31.90	$0.46	4.7%	4.7%	4.8%	4.8%	4.8%	4.9%	4.9%	10.9%
Southern Co	$31.01	$0.42	5.5%	5.4%	5.3%	5.2%	5.1%	5.0%	4.9%	10.9%
Wisconsin Energy Corp	$42.02	$0.34	9.4%	8.6%	7.9%	7.1%	6.4%	5.6%	4.9%	9.4%
Xcel Energy Inc	$17.86	$0.24	6.0%	5.8%	5.7%	5.5%	5.3%	5.1%	4.9%	10.9%

Sources and Notes:
[1]: Workpaper #1 to Table No. MJV-6.
[2]: Workpaper #2 to Table No. MJV-6.
[3]: Table No. MJV-5, [6].
[4]: [3] - {([3] - [9])/ 6}.
[5]: [4] - {([3] - [9])/ 6}.
[6]: [5] - {([3] - [9])/ 6}.
[7]: [6] - {([3] - [9])/ 6}.
[8]: [7] - {([3] - [9])/ 6}.
[9]: Blue Chip Economic Indicators published March 10, 2009. This number is assumed to be the perpetual growth rate. (See Appendix D).
[10]: Workpaper #3 to Table No. MJV-6.

Workpaper #1 to Table No. MJV-6

US Electric Sample

Common Stock Prices from February 9, 2009 to March 2, 2009

Company	3/2/2009	2/27/2009	2/26/2009	2/25/2009	2/24/2009	2/23/2009	2/20/2009	2/19/2009	2/18/2009	2/17/2009	2/13/2009	2/12/2009	2/11/2009	2/10/2009	2/9/2009	Average
American Electric Power Co Inc	$26.98	$28.05	$28.77	$29.34	$29.58	$28.40	$29.46	$30.11	$29.80	$30.05	$31.81	$31.44	$31.67	$31.86	$32.94	$30.02
Cleco Corp	$19.87	$20.52	$19.06	$19.72	$19.91	$19.48	$19.87	$20.58	$20.67	$21.01	$21.84	$21.99	$22.07	$22.26	$22.77	$20.77
Consolidated Edison Inc	$35.24	$36.21	$36.53	$36.84	$37.46	$37.02	$37.54	$37.98	$37.74	$38.12	$39.37	$40.19	$40.26	$40.20	$41.19	$38.13
Empire District Electric Co/The	$13.30	$13.81	$14.08	$14.33	$14.90	$14.65	$15.34	$16.10	$15.98	$16.29	$16.94	$17.02	$17.15	$17.38	$17.84	$15.67
Entergy Corp	$65.40	$67.39	$68.39	$68.47	$68.25	$66.02	$67.64	$69.50	$68.67	$69.36	$69.98	$69.37	$70.80	$70.57	$72.55	$68.82
FirstEnergy Corp	$40.52	$42.56	$43.50	$45.78	$48.02	$45.43	$47.39	$48.22	$47.23	$48.00	$51.36	$51.75	$51.56	$51.74	$52.81	$47.72
IDACORP Inc	$23.28	$24.34	$24.59	$25.02	$25.48	$25.08	$24.25	$24.39	$25.63	$25.94	$26.92	$26.95	$26.62	$27.14	$28.01	$25.58
MGE Energy Inc	$29.53	$30.08	$29.23	$29.77	$30.13	$29.59	$30.12	$30.68	$30.34	$30.74	$32.09	$31.92	$31.97	$31.80	$32.54	$30.70
NSTAR	$30.84	$32.17	$32.37	$32.79	$32.97	$32.30	$32.56	$33.41	$33.31	$33.81	$34.46	$33.96	$33.60	$33.43	$34.36	$33.09
Otter Tail Corp	$16.85	$17.41	$17.62	$17.87	$18.23	$17.51	$18.75	$19.41	$19.68	$19.64	$20.56	$20.42	$20.99	$20.54	$21.29	$19.12
Pepco Holdings Inc	$14.26	$15.00	$15.09	$15.81	$15.89	$15.31	$15.96	$16.36	$16.45	$16.71	$17.64	$17.61	$18.03	$17.89	$18.59	$16.44
Pinnacle West Capital Corp	$24.95	$26.26	$26.42	$26.67	$26.73	$26.28	$28.71	$30.59	$30.68	$31.03	$33.31	$33.18	$33.40	$33.54	$34.29	$29.74
PPL Corp	$26.68	$27.89	$28.43	$29.15	$29.25	$28.18	$28.80	$30.20	$29.61	$29.69	$31.14	$31.40	$31.29	$31.64	$32.76	$29.74
Progress Energy Inc	$34.23	$35.42	$35.64	$36.51	$37.55	$36.37	$37.17	$37.53	$37.27	$37.25	$38.84	$38.93	$38.70	$38.35	$39.92	$37.31
SCANA Corp	$28.94	$30.13	$30.63	$30.74	$31.18	$30.64	$30.98	$31.17	$31.65	$31.82	$33.58	$34.01	$34.13	$34.16	$34.68	$31.90
Southern Co	$29.78	$30.31	$30.65	$31.21	$30.97	$29.71	$30.17	$30.87	$30.72	$30.41	$31.39	$31.62	$32.15	$32.12	$33.06	$31.01
Wisconsin Energy Corp	$38.61	$39.82	$40.95	$41.45	$41.72	$41.59	$42.22	$42.27	$42.15	$42.39	$43.60	$42.73	$43.28	$43.22	$44.37	$42.02
Xcel Energy Inc	$17.15	$17.74	$17.50	$17.67	$18.04	$17.57	$17.73	$17.95	$17.70	$17.51	$18.03	$18.14	$18.13	$18.25	$18.81	$17.86

Sources and Notes:
Bloomberg as of March 02, 2009.
Daily prices for the 15-trading day period ending March 02 2009.

Workpaper #2 to Table No. MJV-6

US Electric Sample

Most Recent Paid Dividends

Company	Most Recent Dividend
American Electric Power Co Inc	$0.41
Cleco Corp	$0.23
Consolidated Edison Inc	$0.59
Empire District Electric Co/The	$0.32
Entergy Corp	$0.75
FirstEnergy Corp	$0.55
IDACORP Inc	$0.30
MGE Energy Inc	$0.36
NSTAR	$0.38
Otter Tail Corp	$0.30
Pepco Holdings Inc	$0.27
Pinnacle West Capital Corp	$0.53
PPL Corp	$0.34
Progress Energy Inc	$0.62
SCANA Corp	$0.46
Southern Co	$0.42
Wisconsin Energy Corp	$0.34
Xcel Energy Inc	$0.24

Sources and Notes:
Bloomberg as of March 02, 2009.

Workpaper #3 to Table No. MJV-6

DCF Cost of Equity of the US Electric Sample

Multi - Stage DCF (using Blue Chip Economic Indicator Long-Term GDP Growth Forecast as the Perpetual Growth Rate)

Year	Company	American Electric Power Co Inc	Cleco Corp	Consolidated Edison Inc	Empire District Electric Co/The	Entergy Corp	FirstEnergy Corp	IDACORP Inc	MGE Energy Inc	NSTAR	Otter Tail Corp	Pepco Holdings Inc	Pinnacle West Capital Corp	PPL Corp	Progress Energy Inc	SCANA Corp	Southern Co	Wisconsin Energy Corp	Xcel Energy Inc
	Current Dividend	$0.41	$0.23	$0.59	$0.32	$0.75	$0.55	$0.30	$0.36	$0.38	$0.30	$0.27	$0.53	$0.34	$0.62	$0.46	$0.42	$0.34	$0.24
	Current Stock Price	($30.02)	($20.77)	($38.13)	($15.67)	($68.82)	($47.72)	($25.58)	($30.70)	($33.09)	($19.12)	($16.44)	($29.74)	($29.74)	($37.31)	($31.90)	($31.01)	($42.02)	($17.86)
YEAR 2009	Dividend Q2 Estimate	$0.42	$0.23	$0.60	$0.33	$0.76	$0.56	$0.30	$0.36	$0.38	$0.30	$0.27	$0.53	$0.34	$0.63	$0.46	$0.43	$0.35	$0.24
YEAR 2009	Dividend Q3 Estimate	$0.42	$0.24	$0.60	$0.34	$0.77	$0.57	$0.31	$0.37	$0.39	$0.31	$0.28	$0.54	$0.35	$0.63	$0.47	$0.43	$0.35	$0.24
YEAR 2009	Dividend Q4 Estimate	$0.43	$0.25	$0.61	$0.35	$0.79	$0.58	$0.31	$0.37	$0.39	$0.32	$0.28	$0.54	$0.36	$0.64	$0.47	$0.44	$0.36	$0.24
YEAR 2010	Dividend Q1 Estimate	$0.43	$0.26	$0.61	$0.36	$0.80	$0.60	$0.31	$0.37	$0.40	$0.32	$0.29	$0.55	$0.37	$0.65	$0.48	$0.44	$0.37	$0.25
YEAR 2010	Dividend Q2 Estimate	$0.44	$0.26	$0.62	$0.37	$0.81	$0.61	$0.32	$0.37	$0.41	$0.33	$0.29	$0.55	$0.38	$0.65	$0.48	$0.45	$0.38	$0.25
YEAR 2010	Dividend Q3 Estimate	$0.44	$0.27	$0.63	$0.38	$0.83	$0.62	$0.32	$0.38	$0.41	$0.34	$0.29	$0.56	$0.39	$0.66	$0.49	$0.46	$0.39	$0.26
YEAR 2010	Dividend Q4 Estimate	$0.45	$0.28	$0.63	$0.39	$0.84	$0.63	$0.33	$0.38	$0.42	$0.35	$0.30	$0.56	$0.40	$0.67	$0.49	$0.46	$0.39	$0.26
YEAR 2011	Dividend Q1 Estimate	$0.45	$0.29	$0.64	$0.40	$0.85	$0.65	$0.33	$0.38	$0.43	$0.35	$0.30	$0.57	$0.42	$0.68	$0.50	$0.47	$0.40	$0.26
YEAR 2011	Dividend Q2 Estimate	$0.46	$0.30	$0.65	$0.42	$0.87	$0.66	$0.33	$0.39	$0.43	$0.36	$0.31	$0.57	$0.43	$0.68	$0.50	$0.47	$0.41	$0.27
YEAR 2011	Dividend Q3 Estimate	$0.47	$0.31	$0.65	$0.43	$0.88	$0.67	$0.34	$0.39	$0.44	$0.37	$0.31	$0.58	$0.44	$0.69	$0.51	$0.48	$0.42	$0.27
YEAR 2011	Dividend Q4 Estimate	$0.47	$0.32	$0.66	$0.44	$0.89	$0.69	$0.34	$0.39	$0.45	$0.38	$0.32	$0.58	$0.46	$0.70	$0.52	$0.49	$0.43	$0.27
YEAR 2012	Dividend Q1 Estimate	$0.48	$0.33	$0.67	$0.46	$0.91	$0.70	$0.34	$0.39	$0.45	$0.38	$0.32	$0.59	$0.47	$0.70	$0.52	$0.49	$0.44	$0.28
YEAR 2012	Dividend Q2 Estimate	$0.48	$0.34	$0.67	$0.47	$0.92	$0.71	$0.35	$0.40	$0.46	$0.39	$0.33	$0.60	$0.49	$0.71	$0.53	$0.50	$0.45	$0.28
YEAR 2012	Dividend Q3 Estimate	$0.49	$0.35	$0.68	$0.48	$0.94	$0.73	$0.35	$0.40	$0.47	$0.40	$0.33	$0.60	$0.50	$0.72	$0.53	$0.51	$0.46	$0.29
YEAR 2012	Dividend Q4 Estimate	$0.50	$0.37	$0.69	$0.50	$0.95	$0.74	$0.36	$0.40	$0.47	$0.41	$0.34	$0.61	$0.52	$0.73	$0.54	$0.51	$0.47	$0.29
YEAR 2013	Dividend Q1 Estimate	$0.50	$0.38	$0.69	$0.51	$0.97	$0.76	$0.36	$0.41	$0.48	$0.42	$0.34	$0.61	$0.54	$0.74	$0.55	$0.52	$0.48	$0.30
YEAR 2013	Dividend Q2 Estimate	$0.51	$0.39	$0.70	$0.53	$0.98	$0.77	$0.37	$0.41	$0.49	$0.43	$0.34	$0.62	$0.55	$0.74	$0.55	$0.53	$0.49	$0.30
YEAR 2013	Dividend Q3 Estimate	$0.51	$0.40	$0.71	$0.54	$1.00	$0.79	$0.37	$0.41	$0.50	$0.44	$0.35	$0.62	$0.57	$0.75	$0.56	$0.54	$0.51	$0.30
YEAR 2013	Dividend Q4 Estimate	$0.52	$0.42	$0.71	$0.56	$1.02	$0.81	$0.37	$0.41	$0.51	$0.45	$0.35	$0.63	$0.59	$0.76	$0.57	$0.54	$0.52	$0.31
YEAR 2014	Dividend Q1 Estimate	$0.53	$0.43	$0.72	$0.58	$1.03	$0.82	$0.38	$0.42	$0.51	$0.46	$0.36	$0.64	$0.61	$0.77	$0.57	$0.55	$0.53	$0.31
YEAR 2014	Dividend Q2 Estimate	$0.53	$0.44	$0.73	$0.59	$1.05	$0.84	$0.38	$0.42	$0.52	$0.47	$0.37	$0.64	$0.62	$0.78	$0.58	$0.56	$0.54	$0.32
YEAR 2014	Dividend Q3 Estimate	$0.54	$0.46	$0.74	$0.61	$1.07	$0.85	$0.39	$0.42	$0.53	$0.48	$0.37	$0.65	$0.64	$0.78	$0.59	$0.56	$0.55	$0.32
YEAR 2014	Dividend Q4 Estimate	$0.55	$0.47	$0.74	$0.62	$1.08	$0.87	$0.39	$0.43	$0.54	$0.49	$0.38	$0.66	$0.66	$0.79	$0.59	$0.57	$0.56	$0.33
YEAR 2015	Dividend Q1 Estimate	$0.55	$0.48	$0.75	$0.64	$1.10	$0.89	$0.40	$0.43	$0.54	$0.50	$0.38	$0.66	$0.68	$0.80	$0.60	$0.58	$0.57	$0.33
YEAR 2015	Dividend Q2 Estimate	$0.56	$0.49	$0.76	$0.66	$1.12	$0.90	$0.40	$0.44	$0.55	$0.50	$0.39	$0.67	$0.70	$0.81	$0.61	$0.59	$0.59	$0.34
YEAR 2015	Dividend Q3 Estimate	$0.57	$0.51	$0.77	$0.67	$1.13	$0.92	$0.41	$0.44	$0.56	$0.51	$0.39	$0.68	$0.71	$0.82	$0.61	$0.60	$0.60	$0.34
YEAR 2015	Dividend Q4 Estimate	$0.58	$0.52	$0.78	$0.69	$1.15	$0.93	$0.41	$0.44	$0.57	$0.52	$0.40	$0.68	$0.73	$0.83	$0.62	$0.60	$0.61	$0.35
YEAR 2016	Dividend Q1 Estimate	$0.58	$0.53	$0.78	$0.70	$1.17	$0.95	$0.41	$0.45	$0.58	$0.53	$0.40	$0.69	$0.75	$0.84	$0.63	$0.61	$0.62	$0.35
YEAR 2016	Dividend Q2 Estimate	$0.59	$0.55	$0.79	$0.72	$1.18	$0.97	$0.42	$0.45	$0.59	$0.54	$0.41	$0.70	$0.77	$0.85	$0.64	$0.62	$0.63	$0.36
YEAR 2016	Dividend Q3 Estimate	$0.60	$0.56	$0.80	$0.73	$1.20	$0.98	$0.42	$0.46	$0.59	$0.55	$0.41	$0.71	$0.79	$0.86	$0.64	$0.63	$0.64	$0.36
YEAR 2016	Dividend Q4 Estimate	$0.60	$0.57	$0.81	$0.75	$1.22	$1.00	$0.43	$0.46	$0.60	$0.56	$0.42	$0.71	$0.80	$0.87	$0.65	$0.63	$0.65	$0.37
YEAR 2017	Dividend Q1 Estimate	$0.61	$0.58	$0.82	$0.77	$1.23	$1.01	$0.43	$0.46	$0.61	$0.57	$0.42	$0.72	$0.82	$0.88	$0.66	$0.64	$0.66	$0.37
YEAR 2017	Dividend Q2 Estimate	$0.62	$0.60	$0.83	$0.78	$1.25	$1.03	$0.44	$0.47	$0.62	$0.58	$0.43	$0.73	$0.84	$0.89	$0.67	$0.65	$0.67	$0.37
YEAR 2017	Dividend Q3 Estimate	$0.63	$0.61	$0.84	$0.79	$1.27	$1.04	$0.45	$0.47	$0.63	$0.59	$0.43	$0.74	$0.85	$0.90	$0.67	$0.66	$0.68	$0.38
YEAR 2017	Dividend Q4 Estimate	$0.63	$0.62	$0.85	$0.81	$1.28	$1.06	$0.45	$0.48	$0.63	$0.60	$0.44	$0.75	$0.87	$0.91	$0.68	$0.67	$0.70	$0.38
YEAR 2018	Dividend Q1 Estimate	$0.64	$0.63	$0.86	$0.82	$1.30	$1.08	$0.46	$0.48	$0.64	$0.61	$0.45	$0.75	$0.88	$0.92	$0.69	$0.68	$0.71	$0.39
YEAR 2018	Dividend Q2 Estimate	$0.65	$0.64	$0.87	$0.83	$1.32	$1.09	$0.46	$0.49	$0.65	$0.61	$0.45	$0.76	$0.90	$0.93	$0.70	$0.68	$0.72	$0.39
YEAR 2018	Dividend Q3 Estimate	$0.66	$0.65	$0.88	$0.85	$1.33	$1.11	$0.47	$0.50	$0.66	$0.62	$0.46	$0.77	$0.91	$0.94	$0.71	$0.69	$0.73	$0.40
YEAR 2018	Dividend Q4 Estimate	$0.67	$0.66	$0.89	$0.86	$1.35	$1.12	$0.47	$0.50	$0.67	$0.63	$0.46	$0.78	$0.92	$0.95	$0.72	$0.70	$0.74	$0.40
YEAR 2019	Dividend Q1 Estimate	$0.67	$0.67	$0.90	$0.87	$1.37	$1.14	$0.48	$0.51	$0.68	$0.64	$0.47	$0.79	$0.94	$0.96	$0.72	$0.71	$0.75	$0.41
YEAR 2019 Q2	Year 10 Stock Price	$49.87	$38.96	$62.45	$30.89	$115.94	$82.51	$42.16	$49.60	$55.70	$33.97	$27.74	$48.63	$55.38	$61.39	$52.68	$51.78	$72.31	$30.01
	Trial COE: Quarterly Rate	2.6%	3.0%	2.7%	4.2%	2.4%	2.6%	2.4%	2.3%	2.5%	3.2%	3.0%	2.9%	3.0%	2.8%	2.6%	2.6%	2.3%	2.6%
	Trial COE: Annual Rate	10.8%	12.5%	11.2%	17.8%	10.1%	11.0%	9.9%	9.3%	10.2%	13.3%	12.4%	12.1%	12.4%	11.8%	10.9%	10.9%	9.4%	10.9%
	Cost of Equity	10.8%	12.5%	11.2%	17.8%	10.1%	11.0%	9.9%	9.3%	10.2%	13.3%	12.4%	12.1%	12.4%	11.8%	10.9%	10.9%	9.4%	10.9%
	(Trial COE - COE) x 100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sources and Notes:

All Growth Rate Estimates: Table No. MJV-6; Panel B.

Stock Prices and Dividends are from Bloomberg as of March 02, 2009.

1. See Workpaper #1 to Table No. MJV-6 for the average closing stock price obtained from Bloomberg.
2. See Workpaper #2 to Table No. MJV-6 for the the for the quarterly dividend obtained from Bloomberg.
3. The Blue Chip Economic Indicator Long-Term GDP Growth Rate is used to calculate the Year 10 Stock Price.
   {(the Dividend Year 2019 Q2 Estimate) x ((1 + the Perpetual Growth Rate) ^ (1/4) x (1 + Trial COE - Quarterly Rate))} /
   {(Trial COE - Quarterly Rate) - ((1 + the Perpetual Growth Rate) ^ (1/4) -1)}.

Table No. MJV-7

Overall Cost of Capital of the US Electric Sample

Panel A: Simple DCF Method (Quarterly)

Company	4th Quarter, 2008 Bond Rating [1]	4th Quarter, 2008 Preferred Equity Rating [2]	DCF Cost of Equity [3]	DCF Common Equity to Market Value Ratio [4]	Cost of Preferred Equity [5]	DCF Preferred Equity to Market Value Ratio [6]	DCF Cost of Debt [7]	DCF Debt to Market Value Ratio [8]	Wisconsin Power and Light Company's Income Tax Rate [9]	Overall After- Tax Cost of Capital [10]
American Electric Power Co Inc	BBB	BBB	11.0%	0.37	7.6%	0.00	7.3%	0.63	40.1%	6.8%
Cleco Corp	BBB	BBB	18.8%	0.50	7.6%	0.00	7.3%	0.50	40.1%	11.6%
Consolidated Edison Inc	A	A	10.7%	0.44	6.6%	0.01	6.1%	0.55	40.1%	6.8%
Empire District Electric Co/The	BBB	BBB	21.9%	0.39	7.6%	0.00	7.3%	0.61	40.1%	11.2%
Entergy Corp	BBB	BBB	11.3%	0.51	7.6%	0.01	7.3%	0.48	40.1%	7.9%
FirstEnergy Corp	BBB	BBB	13.5%	0.47	7.6%	0.00	7.3%	0.53	40.1%	8.7%
IDACORP Inc	BBB	BBB	9.7%	0.42	7.6%	0.00	7.3%	0.58	40.1%	6.6%
MGE Energy Inc	AA	AA	7.9%	0.63	6.1%	0.00	5.5%	0.37	40.1%	6.2%
NSTAR	A	A	11.4%	0.52	6.6%	0.00	6.1%	0.48	40.1%	7.7%
Otter Tail Corp	BBB	BBB	15.9%	0.57	7.6%	0.01	7.3%	0.42	40.1%	11.0%
Pepco Holdings Inc	BBB	BBB	13.1%	0.36	7.6%	0.00	7.3%	0.64	40.1%	7.5%
Pinnacle West Capital Corp	BBB	BBB	11.5%	0.39	7.6%	0.00	7.3%	0.61	40.1%	7.2%
PPL Corp	BBB	BBB	18.5%	0.54	7.6%	0.01	7.3%	0.44	40.1%	12.1%
Progress Energy Inc	BBB	BBB	11.5%	0.40	7.6%	0.00	7.3%	0.60	40.1%	7.2%
SCANA Corp	A	A	10.9%	0.43	6.6%	0.01	6.1%	0.56	40.1%	6.8%
Southern Co	A	A	11.4%	0.54	6.6%	0.02	6.1%	0.44	40.1%	7.9%
Wisconsin Energy Corp	BBB	BBB	12.9%	0.51	7.6%	0.00	7.3%	0.48	40.1%	8.8%
Xcel Energy Inc	BBB	BBB	11.8%	0.43	7.6%	0.01	7.3%	0.56	40.1%	7.6%
Average			13.0%	0.47	7.3%	0.01	6.9%	0.53	40.1%	8.3%

Sources and Notes:
[1]: Bloomberg as of March 02, 2009.
[2]: Preferred ratings were assumed equal to debt ratings.
[3]: Table No. MJV-6; Panel A, [6].
[4]: Table No. MJV-4, [1].
[5]: Workpaper #2 to Table No. MJV-11, Panel C, [1].
[6]: Table No. MJV-4, [2].
[7]: Workpaper #2 to Table No. MJV-11, Panel B, [1].
[8]: Table No. MJV-4, [3].
[9]: Provided by Wisconsin Power and Light Company.
[10]: ([3] x [4]) + ([5] x [6]) + {[7] x [8] x (1 - [9])}.

Table No. MJV-7

Overall Cost of Capital of the US Electric Sample

Panel B: Multi-Stage DCF (Using Blue Chip Long-Term GDP Growth Forecast as the Perpetual Rate)

Company	4th Quarter, 2008 Bond Rating [1]	4th Quarter, 2008 Preferred Equity Rating [2]	DCF Cost of Equity [3]	DCF Common Equity to Market Value Ratio [4]	Cost of Preferred Equity [5]	DCF Preferred Equity to Market Value Ratio [6]	DCF Cost of Debt [7]	DCF Debt to Market Value Ratio [8]	Wisconsin Power and Light Company's Income Tax Rate [9]	Overall After- Tax Cost of Capital [10]
American Electric Power Co Inc	BBB	BBB	10.8%	0.37	7.6%	0.00	7.3%	0.63	40.1%	6.8%
Cleco Corp	BBB	BBB	12.5%	0.50	7.6%	0.00	7.3%	0.50	40.1%	8.5%
Consolidated Edison Inc	A	A	11.2%	0.44	6.6%	0.01	6.1%	0.55	40.1%	7.1%
Empire District Electric Co/The	BBB	BBB	17.8%	0.39	7.6%	0.00	7.3%	0.61	40.1%	9.6%
Entergy Corp	BBB	BBB	10.1%	0.51	7.6%	0.01	7.3%	0.48	40.1%	7.3%
FirstEnergy Corp	BBB	BBB	11.0%	0.47	7.6%	0.00	7.3%	0.53	40.1%	7.5%
IDACORP Inc	BBB	BBB	9.9%	0.42	7.6%	0.00	7.3%	0.58	40.1%	6.7%
MGE Energy Inc	AA	AA	9.3%	0.63	6.1%	0.00	5.5%	0.37	40.1%	7.1%
NSTAR	A	A	10.2%	0.52	6.6%	0.00	6.1%	0.48	40.1%	7.1%
Otter Tail Corp	BBB	BBB	13.3%	0.57	7.6%	0.01	7.3%	0.42	40.1%	9.5%
Pepco Holdings Inc	BBB	BBB	12.4%	0.36	7.6%	0.00	7.3%	0.64	40.1%	7.3%
Pinnacle West Capital Corp	BBB	BBB	12.1%	0.39	7.6%	0.00	7.3%	0.61	40.1%	7.4%
PPL Corp	BBB	BBB	12.4%	0.54	7.6%	0.01	7.3%	0.44	40.1%	8.8%
Progress Energy Inc	BBB	BBB	11.8%	0.40	7.6%	0.00	7.3%	0.60	40.1%	7.3%
SCANA Corp	A	A	10.9%	0.43	6.6%	0.01	6.1%	0.56	40.1%	6.8%
Southern Co	A	A	10.9%	0.54	6.6%	0.02	6.1%	0.44	40.1%	7.6%
Wisconsin Energy Corp	BBB	BBB	9.4%	0.51	7.6%	0.00	7.3%	0.48	40.1%	7.0%
Xcel Energy Inc	BBB	BBB	10.9%	0.43	7.6%	0.01	7.3%	0.56	40.1%	7.2%
Average			11.5%	0.47	7.3%	0.01	6.9%	0.53	40.1%	7.6%

Sources and Notes:
[1]: Bloomberg as of March 02, 2009.
[2]: Preferred ratings were assumed equal to debt ratings.
[3]: Table No. MJV-6; Panel B, [10].
[4]: Table No. MJV-4, [1].
[5]: Workpaper #2 to Table No. MJV-11, Panel C, [1].
[6]: Table No. MJV-4, [2].
[7]: Workpaper #2 to Table No. MJV-11, Panel B, [1].
[8]: Table No. MJV-4, [3].
[9]: Provided by Wisconsin Power and Light Company.
[10]: ([3] x [4]) + ([5] x [6]) + {[7] x [8] x (1 - [9])}.

Table No. MJV-8

DCF Cost of Equity at Wisconsin Power and Light Company Capital Structure

US Electric Sample (Including Imputed Debt)

	Overall Cost of Capital [1]	Wisconsin Power and Light Company's Regulatory % Debt [2]	Wisconsin Power and Light Company's Cost of Debt [3]	Wisconsin Power and Light Company's Income Tax Rate [4]	Wisconsin Power and Light Company's Regulatory % Preferred Equity [5]	Wisconsin Power and Light Company's Cost of Preferred Equity [6]	Wisconsin Power and Light Company's Regulatory % Equity [7]	Estimated Return on Equity [8]
Using All Companies with Growth Forecast								
Simple DCF Quarterly	8.3%	48.7%	6.1%	40.1%	2.2%	6.6%	49.1%	13.0%
Multi-Stage DCF - Using the Blue Chip Economic Indicator Long-Term GDP Growth Forecast as the Perpetual Rate	7.6%	48.7%	6.1%	40.1%	2.2%	6.6%	49.1%	11.5%

Sources and Notes:
[1]: Table No. MJV-7; Panels A-B, [10].
[2]: Provided by Wisconsin Power and Light Company.
[3]: Based on an A rating, as provided by Wisconsin Power and Light Company. Yield from Bloomberg as of March 02, 2009.
[4]: Provided by Wisconsin Power and Light Company.
[5]: Provided by Wisconsin Power and Light Company.
[6]: From Mergent Bond Record, February 2009 Edition.
[7]: Provided by Wisconsin Power and Light Company.
[8]: {[1] - ([2] x [3] x (1 - [4]) + [5] x [6])} / [7].

Table No. MJV-9 - Interest Rates

US Electric Sample

Panel A: US Interest Rate Series (All Constant Maturity Series)

	Trading Date	30 Day	90 Day	180 Day	1 Year	2 Year	3 Year	5 Year	7 Year	10 Year	Long Term
	3/2/2009	0.17%	0.28%	0.45%	0.67%	0.89%	1.28%	1.86%	2.54%	2.91%	3.89%
	2/27/2009	0.16%	0.26%	0.45%	0.72%	1.00%	1.40%	1.99%	2.69%	3.02%	3.98%
	2/26/2009	0.18%	0.27%	0.47%	0.73%	1.08%	1.50%	2.07%	2.72%	2.98%	3.93%
	2/25/2009	0.21%	0.30%	0.52%	0.75%	1.09%	1.49%	2.06%	2.42%	2.95%	3.88%
	2/24/2009	0.22%	0.32%	0.49%	0.71%	1.03%	1.37%	1.89%	2.26%	2.80%	3.77%
	2/23/2009	0.19%	0.29%	0.50%	0.69%	0.96%	1.34%	1.84%	2.22%	2.78%	3.79%
	2/20/2009	0.19%	0.27%	0.48%	0.64%	0.96%	1.30%	1.81%	2.21%	2.78%	3.82%
	2/19/2009	0.22%	0.30%	0.51%	0.67%	1.01%	1.38%	1.89%	2.28%	2.85%	3.92%
	2/18/2009	0.23%	0.31%	0.50%	0.64%	0.97%	1.33%	1.81%	2.18%	2.74%	3.77%
	2/17/2009	0.26%	0.32%	0.48%	0.61%	0.87%	1.22%	1.65%	2.05%	2.64%	3.70%
	2/13/2009	0.23%	0.29%	0.46%	0.61%	0.97%	1.37%	1.88%	2.29%	2.89%	3.91%
	2/12/2009	0.25%	0.29%	0.43%	0.58%	0.89%	1.28%	1.73%	2.14%	2.75%	3.71%
	2/11/2009	0.22%	0.30%	0.46%	0.60%	0.93%	1.32%	1.76%	2.17%	2.78%	3.69%
	2/10/2009	0.24%	0.31%	0.44%	0.60%	0.92%	1.31%	1.79%	2.23%	2.90%	3.77%
	2/9/2009	0.22%	0.32%	0.47%	0.60%	1.05%	1.50%	1.99%	2.42%	3.07%	3.91%
[A]	Average:	0.21%	0.30%	0.47%	0.65%	0.97%	1.36%	1.87%	2.32%	2.86%	3.83%
[B]	Maturity Premium:	0.00%	0.10%	0.20%	0.33%	0.59%	0.75%	1.00%	1.15%	1.27%	1.50%
[C]	Implied Short-Term Yield:	0.21%	0.20%	0.27%	0.32%	0.38%	0.61%	0.87%	1.17%	1.59%	2.33%

Sources and Notes:

[A]: Average over the last 15 trading days.

[B]: Workpaper #1 to Table No. MJV-9 Panel A, Panel C, [2].

[C]: [A] - [B].

Bloomberg as of March 02, 2009. The most recent 15 trading days are used.

Workpaper #1 to Table No. MJV-9 Panel A

US Electric Sample

Panel A: Historical Bond Yield Averages

	Treasury Bill Yield [1]	Intermediate-Term Government Bond Yield (5-year) [2]	Long-Term Government Bond Yield (20-year) [3]
1926	3.27%	3.61%	3.54%
1927	3.12%	3.40%	3.17%
1928	3.56%	4.01%	3.40%
1929	4.75%	3.62%	3.40%
1930	2.41%	2.91%	3.30%
1931	1.07%	4.12%	4.07%
1932	0.96%	3.04%	3.15%
1933	0.30%	3.25%	3.36%
1934	0.16%	2.49%	2.93%
1935	0.17%	1.63%	2.76%
1936	0.18%	1.29%	2.55%
1937	0.31%	1.14%	2.73%
1938	-0.02%	1.52%	2.52%
1939	0.02%	0.98%	2.26%
1940	0.00%	0.57%	1.94%
1941	0.06%	0.82%	2.04%
1942	0.27%	0.72%	2.46%
1943	0.35%	1.45%	2.48%
1944	0.33%	1.40%	2.46%
1945	0.33%	1.03%	1.99%
1946	0.35%	1.12%	2.12%
1947	0.50%	1.34%	2.43%
1948	0.81%	1.51%	2.37%
1949	1.10%	1.23%	2.09%
1950	1.20%	1.62%	2.24%
1951	1.49%	2.17%	2.69%
1952	1.66%	2.35%	2.79%
1953	1.82%	2.18%	2.74%
1954	0.86%	1.72%	2.72%
1955	1.57%	2.80%	2.95%
1956	2.46%	3.63%	3.45%
1957	3.14%	2.84%	3.23%
1958	1.54%	3.81%	3.82%
1959	2.95%	4.98%	4.47%
1960	2.66%	3.31%	3.80%
1961	2.13%	3.84%	4.15%
1962	2.73%	3.50%	3.95%
1963	3.12%	4.04%	4.17%
1964	3.54%	4.03%	4.23%
1965	3.93%	4.90%	4.50%
1966	4.76%	4.79%	4.55%
1967	4.21%	5.77%	5.56%
1968	5.21%	5.96%	5.98%
1969	6.58%	8.29%	6.87%
1970	6.52%	5.90%	6.48%
1971	4.39%	5.25%	5.97%
1972	3.84%	5.85%	5.99%
1973	6.93%	6.79%	7.26%
1974	8.00%	7.12%	7.60%
1975	5.80%	7.19%	8.05%
1976	5.08%	6.00%	7.21%
1977	5.12%	7.51%	8.03%
1978	7.18%	8.83%	8.98%
1979	10.38%	10.33%	10.12%
1980	11.24%	12.45%	11.99%
1981	14.71%	13.96%	13.34%
1982	10.54%	9.90%	10.95%
1983	8.80%	11.41%	11.97%
1984	9.85%	11.04%	11.70%
1985	7.72%	8.55%	9.56%
1986	6.16%	6.85%	7.89%
1987	5.47%	8.32%	9.20%
1988	6.35%	9.17%	9.19%
1989	8.37%	7.94%	8.16%
1990	7.81%	7.70%	8.44%
1991	5.60%	5.97%	7.30%
1992	3.51%	6.11%	7.26%
1993	2.90%	5.22%	6.54%
1994	3.90%	7.80%	7.99%
1995	5.60%	5.38%	6.03%
1996	5.21%	6.16%	6.73%
1997	5.26%	5.73%	6.02%
1998	4.86%	4.68%	5.42%
1999	4.68%	6.45%	6.82%
2000	5.89%	5.07%	5.58%
2001	3.83%	4.42%	5.75%
2002	1.65%	2.61%	4.84%
2003	1.02%	2.97%	5.11%
2004	1.20%	3.47%	4.84%
2005	2.98%	4.34%	4.61%
2006	4.80%	4.65%	4.91%
2007	4.66%	3.28%	4.50%
2008	1.60%	1.26%	3.03%

Source:
[1] - [4]: Ibbotson Associates Stocks Bonds Bills and Inflation (SBBI) monthly paper reports.

Workpaper #1 to Table No. MJV-9 Panel A

US Electric Sample

Panel B: Calculation of Maturity Premia for Different Bond Series

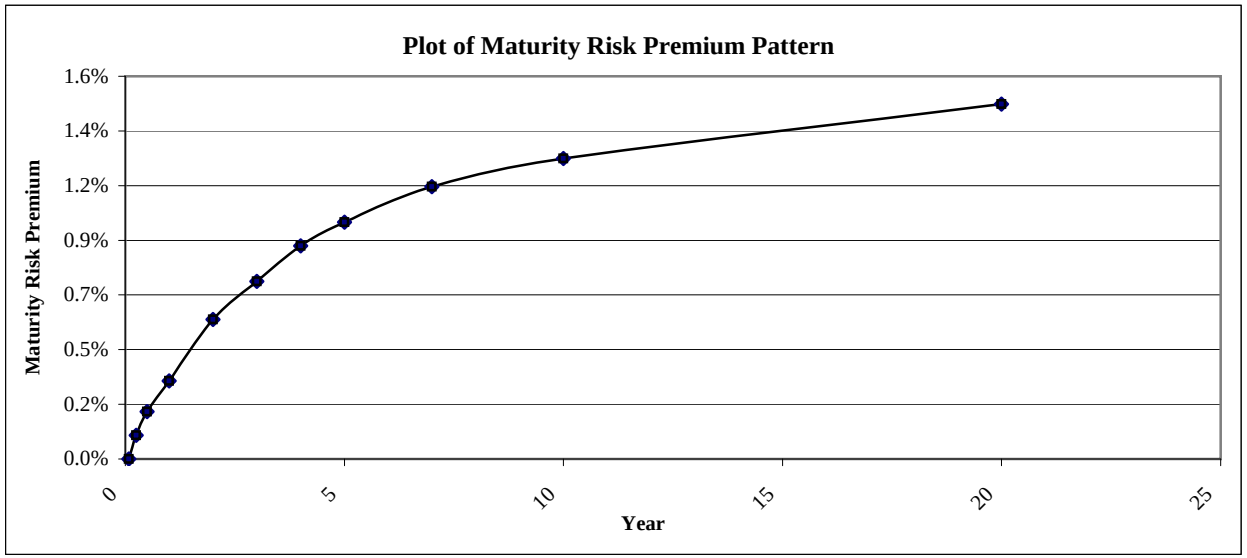
	Annual Historical Average			Maturity Premium Calculation		
	T-Bill Total Return [1]	Intermediate Term Bond Yields [2]	Long-Term Government Bond Yield [3]	T-Bill Total Return [4]	Intermediate Term Bond Yields [5]	Long-Term Government Bond Yield [6]
1926 - 2008	3.75%	4.68%	5.25%	0.00%	0.93%	1.50%
1947 - 2008	4.67%	5.55%	6.08%	0.00%	0.88%	1.41%
1947 - 1966	2.20%	3.03%	3.37%	0.00%	0.83%	1.17%
1967 - 1986	7.41%	8.25%	8.57%	0.00%	0.83%	1.16%
1987 - 2008	4.42%	5.40%	6.29%	0.00%	0.98%	1.87%
Current	0.21%	1.87%	3.83%	0.00%	1.66%	3.62%

Sources and Notes:
[1] - [3] : Workpaper #3 to Table No. MJV-9 Panel A, Panel A.
Maturity Premium is defined as the Average Bond Yield (for each series) less Risk Free Total Return.
[4]: [1] - [1].
[5]: [2] - [1].
[6]: [3] - [1].
Current data from Table No. MJV-9 Panel A.

Workpaper #1 to Table No. MJV-9 Panel A

US Electric Sample

Panel C: Maturity Premium Graph and Calculations (Using Annual Series Data)



Maturity of Bond (Years) [1]	Maturity Risk Premium [2]	Annualized Difference [3]
0.083	0.00%	
0.25	0.10%	0.60%
0.5	0.20%	0.40%
1	0.33%	0.26%
2	0.59%	0.26%
3	0.75%	0.16%
4	0.90%	0.15%
5	1.00%	0.10%
7	1.15%	0.08%
10	1.27%	0.04%
20	1.50%	0.02%

Sources and Notes:
[1]: The maturity of a bond in years.
[2]: Workpaper #3 to Table No. MJV-9 Panel A, Panel B; [4] - [6] and MJV Testimony.
[3]: MJV Testimony.

Table No. MJV-9 - Interest Rates

US Electric Sample

Panel B: U.S. Interest Rate Adjustment

U.S. Long-Term Treasury Bond Yield:	[a]	3.80%
Spread Adjustment:	[b]	0.88%
U.S. Long-Term Risk-Free Rate:	[c]	4.68%

Sources and Notes:
[a]: See Table No. MJV-9, Panel A.
The reported number, 3.83%, is rounded to 3.80%.
[b]: See Workpapers #1 and #2 to Table No. MJV-9 Panel B.
[c]: [a] + [b].

Workpaper #1 to Table No. MJV-9, Panel B

US Electric Sample

Spreads between US Utility Bond (20 year maturity) and US Treasury Bond (20 year maturity)
(in percentage)

Periods	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	Notes
Period 1 - Average Apr-1991 - Dec-2007	0.93	1.23	[1]
Period 2 - Average Aug-2008 - Mar-2009	2.82	3.58	[2]
Period 3 - Average Mar-2009	2.43	3.74	[3]
Period 4 - Average 15-Day (Feb 10, 2009 to Mar 02, 2009)	2.30	3.47	[4]
Spread Increase between Period 2 and Period 1	1.89	2.35	[5] = [2] - [1].
Spread Increase between Period 3 and Period 1	1.50	2.51	[6] = [3] - [1].
Spread Increase between Period 4 and Period 1	**1.37**	**2.24**	[7] = [4] - [1].

Source:
Spreads for the periods are calculated from Bloomberg's yield data.
Average monthly yields for the indices were retrieved from Bloomberg as of April 2, 2009.

Workpaper #2 to Table No. MJV-9, Panel B

US Electric Sample

Spreads between US Utility Bond (30 year maturity) and US Treasury Bond (30 year maturity)
(in percentage)

Periods	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	Notes
Period 1 - Average Apr-1991 - Dec-2007	0.92	1.23	[a]
Period 2 - Average Aug-2008 - Mar-2009	2.64	3.40	[b]
Period 3 - Average Mar-2009	2.40	3.89	[c]
Period 4 - Average 15-Day (Feb 10, 2009 to Mar 02, 2009)	2.17	3.52	[d]
Spread Increase between Period 2 and Period 1	1.72	2.16	[e] = [b] - [a].
Spread Increase between Period 3 and Period 1	1.48	2.65	[f] = [c] - [a].
Spread Increase between Period 4 and Period 1	1.25	2.28	[g] = [d] - [a].

Spreads between US Utility Bond (10 year maturity) and US Treasury Bond (10 year maturity)
(in percentage)

Periods	A-Rated Utility and Treasury	BBB-Rated Utility and Treasury	Notes
Period 1 - Average Apr-1991 - Dec-2007	0.90	1.19	[i]
Period 2 - Average Aug-2008 - Mar-2009	2.80	3.69	[ii]
Period 3 - Average Mar-2009	2.53	3.88	[iii]
Period 4 - Average 15-Day (Feb 10, 2009 to Mar 02, 2009)	2.33	3.63	[iv]
Spread Increase between Period 2 and Period 1	1.90	2.50	[v] = [ii] - [i].
Spread Increase between Period 3 and Period 1	1.63	2.69	[vi] = [iii] - [i].
Spread Increase between Period 4 and Period 1	1.43	2.44	[vii] = [iv] - [i].

Source:
Spreads for the periods are calculated from Bloomberg's yield data.
Average monthly yields for the indices were retrieved from Bloomberg as of April 2, 2009.

Table No. MJV-10

Risk Positioning Cost of Equity of the US Electric Sample

Using the Long-Term Risk-Free Rate

Company	Long-Term Risk-Free Rate [1]	Value Line Betas [2]	Long-Term Market Risk Premium [3]	CAPM Cost of Equity [4]	ECAPM (0.5%) Cost of Equity [5]	ECAPM (1.5%) Cost of Equity [6]
American Electric Power Co Inc	4.7%	0.75	8.00%	10.7%	10.8%	11.1%
Cleco Corp	4.7%	0.80	8.00%	11.1%	11.2%	11.4%
Consolidated Edison Inc	4.7%	0.65	8.00%	9.9%	10.1%	10.4%
Empire District Electric Co/The	4.7%	0.75	8.00%	10.7%	10.8%	11.1%
Entergy Corp	4.7%	0.75	8.00%	10.7%	10.8%	11.1%
FirstEnergy Corp	4.7%	0.80	8.00%	11.1%	11.2%	11.4%
IDACORP Inc	4.7%	0.80	8.00%	11.1%	11.2%	11.4%
MGE Energy Inc	4.7%	0.70	8.00%	10.3%	10.4%	10.7%
NSTAR	4.7%	0.65	8.00%	9.9%	10.1%	10.4%
Otter Tail Corp	4.7%	0.90	8.00%	11.9%	11.9%	12.0%
Pepco Holdings Inc	4.7%	0.75	8.00%	10.7%	10.8%	11.1%
Pinnacle West Capital Corp	4.7%	0.70	8.00%	10.3%	10.4%	10.7%
PPL Corp	4.7%	0.70	8.00%	10.3%	10.4%	10.7%
Progress Energy Inc	4.7%	0.60	8.00%	9.5%	9.7%	10.1%
SCANA Corp	4.7%	0.65	8.00%	9.9%	10.1%	10.4%
Southern Co	4.7%	0.55	8.00%	9.1%	9.3%	9.8%
Wisconsin Energy Corp	4.7%	0.65	8.00%	9.9%	10.1%	10.4%
Xcel Energy Inc	4.7%	0.70	8.00%	10.3%	10.4%	10.7%

Sources and Notes:
[1]: Table No. MJV-9, Panel A, Row [A].
[2]: Workpaper # 1 to Table No. MJV-10, column [1].
[3]: Vilbert Direct Testimony, Appendix B.
[4]: [1] + ([2] x [3]).
[5]: ([1] + 0.5%) + [2] x ([3] - 0.5%).
[6]: ([1] + 1.5%) + [2] x ([3] - 1.5%).

Workpaper # 1 to Table No. MJV-10

US Electric Sample

Value Line Betas

Company	Value Line Betas [1]
American Electric Power Co Inc	0.75
Cleco Corp	0.80
Consolidated Edison Inc	0.65
Empire District Electric Co/The	0.75
Entergy Corp	0.75
FirstEnergy Corp	0.80
IDACORP Inc	0.80
MGE Energy Inc	0.70
NSTAR	0.65
Otter Tail Corp	0.90
Pepco Holdings Inc	0.75
Pinnacle West Capital Corp	0.70
PPL Corp	0.70
Progress Energy Inc	0.60
SCANA Corp	0.65
Southern Co	0.55
Wisconsin Energy Corp	0.65
Xcel Energy Inc	0.70
Average	0.71

Sources and Notes:
[1]: Most recent Value Line Plus Edition, dated December 26, 2008, February 6, 2009, and February 27, 2009.

Table No. MJV-11

Overall Cost of Capital of the US Electric Sample

Panel A: CAPM Cost of Equity Based on the Long-Term Risk-Free Rate

Company	CAPM Cost of Equity [1]	5-Year Average Common Equity to Market Value Ratio [2]	Weighted - Average Cost of Preferred Equity [3]	5-Year Average Preferred Equity to Market Value Ratio [4]	Weighted-Average Cost of Debt [5]	5-Year Average Debt to Market Value Ratio [6]	Wisconsin Power and Light Company's Income Tax Rate [7]	Overall After-Tax Cost of Capital [8]
American Electric Power Co Inc	10.7%	0.48	7.55%	0.00	7.3%	0.52	40.1%	7.4%
Cleco Corp	11.1%	0.59	7.55%	0.01	7.3%	0.40	40.1%	8.4%
Consolidated Edison Inc	9.9%	0.54	6.58%	0.01	6.1%	0.45	40.1%	7.1%
Empire District Electric Co/The	10.7%	0.49	7.55%	0.00	7.3%	0.51	40.1%	7.5%
Entergy Corp	10.7%	0.61	7.55%	0.01	7.3%	0.37	40.1%	8.3%
FirstEnergy Corp	11.1%	0.53	7.55%	0.00	7.3%	0.47	40.1%	7.9%
IDACORP Inc	11.1%	0.49	7.55%	0.00	7.3%	0.51	40.1%	7.6%
MGE Energy Inc	10.3%	0.68	6.10%	0.00	5.5%	0.32	40.1%	8.0%
NSTAR	9.9%	0.53	6.58%	0.00	6.1%	0.47	40.1%	7.0%
Otter Tail Corp	11.9%	0.64	7.55%	0.01	7.3%	0.35	40.1%	9.2%
Pepco Holdings Inc	10.7%	0.43	7.55%	0.00	7.3%	0.57	40.1%	7.1%
Pinnacle West Capital Corp	10.3%	0.48	7.55%	0.00	7.3%	0.52	40.1%	7.2%
PPL Corp	10.3%	0.57	7.55%	0.01	7.3%	0.42	40.1%	7.8%
Progress Energy Inc	9.5%	0.47	7.55%	0.00	7.3%	0.53	40.1%	6.8%
SCANA Corp	9.9%	0.55	6.58%	0.01	6.1%	0.44	40.1%	7.1%
Southern Co	9.1%	0.62	6.58%	0.02	6.1%	0.37	40.1%	7.0%
Wisconsin Energy Corp	9.9%	0.54	7.55%	0.00	7.3%	0.46	40.1%	7.3%
Xcel Energy Inc	10.3%	0.48	7.55%	0.01	7.3%	0.52	40.1%	7.2%
Average	10.4%	0.54	7.25%	0.01	6.9%	0.45	40.1%	7.6%

[1]: Table No. MJV-10; Panel A, [4].
[2]: Table No. MJV-4, [4].
[3]: Workpaper #2 to Table No. MJV-11 ; Panel C, [6].
[4]: Table No. MJV-4, [5].
[5]: Workpaper #2 to Table No. MJV-11 ; Panel B, [6].
[6]: Table No. MJV-4, [6].
[7]: Provided by Wisconsin Power and Light Company.
[8]: ([1] x [2]) + ([3] x [4]) + {[5] x [6] x (1 - [7])}.

Table No. MJV-11

Overall Cost of Capital of the US Electric Sample

Panel B: ECAPM (0.5%) Cost of Equity Based on the Long-Term Risk-Free Rate

Company	ECAPM (0.5%) Cost of Equity [1]	5-Year Average Common Equity to Market Value Ratio [2]	Weighted - Average Cost of Preferred Equity [3]	5-Year Average Preferred Equity to Market Value Ratio [4]	Weighted-Average Cost of Debt [5]	5-Year Average Debt to Market Value Ratio [6]	Wisconsin Power and Light Company's Income Tax Rate [7]	Overall After-Tax Cost of Capital [8]
American Electric Power Co Inc	10.8%	0.48	7.6%	0.00	7.3%	0.52	40.1%	7.4%
Cleco Corp	11.2%	0.59	7.6%	0.01	7.3%	0.40	40.1%	8.4%
Consolidated Edison Inc	10.1%	0.54	6.6%	0.01	6.1%	0.45	40.1%	7.2%
Empire District Electric Co/The	10.8%	0.49	7.6%	0.00	7.3%	0.51	40.1%	7.5%
Entergy Corp	10.8%	0.61	7.6%	0.01	7.3%	0.37	40.1%	8.4%
FirstEnergy Corp	11.2%	0.53	7.6%	0.00	7.3%	0.47	40.1%	8.0%
IDACORP Inc	11.2%	0.49	7.6%	0.00	7.3%	0.51	40.1%	7.7%
MGE Energy Inc	10.4%	0.68	6.1%	0.00	5.5%	0.32	40.1%	8.1%
NSTAR	10.1%	0.53	6.6%	0.00	6.1%	0.47	40.1%	7.1%
Otter Tail Corp	11.9%	0.64	7.6%	0.01	7.3%	0.35	40.1%	9.2%
Pepco Holdings Inc	10.8%	0.43	7.6%	0.00	7.3%	0.57	40.1%	7.1%
Pinnacle West Capital Corp	10.4%	0.48	7.6%	0.00	7.3%	0.52	40.1%	7.3%
PPL Corp	10.4%	0.57	7.6%	0.01	7.3%	0.42	40.1%	7.9%
Progress Energy Inc	9.7%	0.47	7.6%	0.00	7.3%	0.53	40.1%	6.9%
SCANA Corp	10.1%	0.55	6.6%	0.01	6.1%	0.44	40.1%	7.2%
Southern Co	9.3%	0.62	6.6%	0.02	6.1%	0.37	40.1%	7.2%
Wisconsin Energy Corp	10.1%	0.54	7.6%	0.00	7.3%	0.46	40.1%	7.4%
Xcel Energy Inc	10.4%	0.48	7.6%	0.01	7.3%	0.52	40.1%	7.3%
Average	10.5%	0.54	7.25%	0.01	6.9%	0.45	40.1%	7.6%

Sources and Notes:
[1]: Table No. MJV-10; Panel A, [5].
[2]: Table No. MJV-4, [4].
[3]: Workpaper #2 to Table No. MJV-11 ; Panel C, [6].
[4]: Table No. MJV-4, [5].
[5]: Workpaper #2 to Table No. MJV-11 ; Panel B, [6].
[6]: Table No. MJV-4, [6].
[7]: Provided by Wisconsin Power and Light Company.
[8]: ([1] x [2]) + ([3] x [4]) + {[5] x [6] x (1 - [7])}.

Table No. MJV-11

Overall Cost of Capital of the US Electric Sample (Including Imputed Debt)

Panel C: ECAPM (1.5%) Cost of Equity Based on the Long-Term Risk-Free Rate

Company	ECAPM (1.5%) Cost of Equity [1]	5-Year Average Common Equity to Market Value Ratio [2]	Weighted - Average Cost of Preferred Equity [3]	5-Year Average Preferred Equity to Market Value Ratio [4]	Weighted-Average Cost of Debt [5]	5-Year Average Debt to Market Value Ratio [6]	Wisconsin Power and Light Company's Income Tax Rate [7]	Overall After-Tax Cost of Capital [8]
American Electric Power Co Inc	11.1%	0.48	7.6%	0.00	7.3%	0.52	40.1%	7.6%
Cleco Corp	11.4%	0.59	7.6%	0.01	7.3%	0.40	40.1%	8.5%
Consolidated Edison Inc	10.4%	0.54	6.6%	0.01	6.1%	0.45	40.1%	7.4%
Empire District Electric Co/The	11.1%	0.49	7.6%	0.00	7.3%	0.51	40.1%	7.7%
Entergy Corp	11.1%	0.61	7.6%	0.01	7.3%	0.37	40.1%	8.5%
FirstEnergy Corp	11.4%	0.53	7.6%	0.00	7.3%	0.47	40.1%	8.1%
IDACORP Inc	11.4%	0.49	7.6%	0.00	7.3%	0.51	40.1%	7.8%
MGE Energy Inc	10.7%	0.68	6.1%	0.00	5.5%	0.32	40.1%	8.4%
NSTAR	10.4%	0.53	6.6%	0.00	6.1%	0.47	40.1%	7.3%
Otter Tail Corp	12.0%	0.64	7.6%	0.01	7.3%	0.35	40.1%	9.3%
Pepco Holdings Inc	11.1%	0.43	7.6%	0.00	7.3%	0.57	40.1%	7.2%
Pinnacle West Capital Corp	10.7%	0.48	7.6%	0.00	7.3%	0.52	40.1%	7.4%
PPL Corp	10.7%	0.57	7.6%	0.01	7.3%	0.42	40.1%	8.0%
Progress Energy Inc	10.1%	0.47	7.6%	0.00	7.3%	0.53	40.1%	7.1%
SCANA Corp	10.4%	0.55	6.6%	0.01	6.1%	0.44	40.1%	7.4%
Southern Co	9.8%	0.62	6.6%	0.02	6.1%	0.37	40.1%	7.5%
Wisconsin Energy Corp	10.4%	0.54	7.6%	0.00	7.3%	0.46	40.1%	7.6%
Xcel Energy Inc	10.7%	0.48	7.6%	0.01	7.3%	0.52	40.1%	7.4%
Average	10.8%	0.54	7.25%	0.01	6.9%	0.45	40.1%	7.8%

Sources and Notes:
[1]: Table No. MJV-10; Panel A, [6].
[2]: Table No. MJV-4, [4].
[3]: Workpaper #2 to Table No. MJV-11 ; Panel C, [6].
[4]: Table No. MJV-4, [5].
[5]: Workpaper #2 to Table No. MJV-11 ; Panel B, [6].
[6]: Table No. MJV-4, [6].
[7]: Provided by Wisconsin Power and Light Company.
[8]: ([1] x [2]) + ([3] x [4]) + {[5] x [6] x (1 - [7])}.

Workpaper #1 to Table No. MJV-11

US Electric Sample

Panel A: Rating to Yield Conversion

Rating	Bond Yield	Preferred Yield
AA	5.55%	6.10%
A	6.13%	6.58%
BBB	7.30%	7.55%

Sources and Notes:
Bond Yields from Bloomberg as of March 02, 2009.
Preferred Yields from Mergent Bond Record, February 2009 Edition.
AA estimated as A - 0.5 * (BBB - A).

Workpaper #1 to Table No. MJV-11

US Electric Sample

Panel B: Bond Rating Summary

Company	Year End, 2008 [1]	2007 [2]	2006 [3]	2005 [4]	2004 [5]
American Electric Power Co Inc	BBB	BBB	BBB	BBB	BBB
Cleco Corp	BBB	BBB	BBB	BBB	BBB
Consolidated Edison Inc	A	A	A	A	A
Empire District Electric Co/The	BBB	BBB	BBB	BBB	BBB
Entergy Corp	BBB	BBB	BBB	BBB	BBB
FirstEnergy Corp	BBB	BBB	BBB	BBB	BBB
IDACORP Inc	BBB	BBB	BBB	BBB	BBB
MGE Energy Inc	AA	AA	AA	AA	AA
NSTAR	A	A	A	A	A
Otter Tail Corp	BBB	BBB	BBB	BBB	BBB
Pepco Holdings Inc	BBB	BBB	BBB	BBB	BBB
Pinnacle West Capital Corp	BBB	BBB	BBB	BBB	BBB
PPL Corp	BBB	BBB	BBB	BBB	BBB
Progress Energy Inc	BBB	BBB	BBB	BBB	BBB
SCANA Corp	A	A	A	A	A
Southern Co	A	A	A	A	A
Wisconsin Energy Corp	BBB	BBB	BBB	BBB	BBB
Xcel Energy Inc	BBB	BBB	BBB	BBB	BBB

Sources and Notes:
[1] - [5]: Bloomberg as of March 02, 2009.

Workpaper #1 to Table No. MJV-11

US Electric Sample

Panel C: Preferred Equity Rating Summary

Company	Year End, 2008 [1]	2007 [2]	2006 [3]	2005 [4]	2004 [5]
American Electric Power Co Inc	BBB	BBB	BBB	BBB	BBB
Cleco Corp	BBB	BBB	BBB	BBB	BBB
Consolidated Edison Inc	A	A	A	A	A
Empire District Electric Co/The	BBB	BBB	BBB	BBB	BBB
Entergy Corp	BBB	BBB	BBB	BBB	BBB
FirstEnergy Corp	BBB	BBB	BBB	BBB	BBB
IDACORP Inc	BBB	BBB	BBB	BBB	BBB
MGE Energy Inc	AA	AA	AA	AA	AA
NSTAR	A	A	A	A	A
Otter Tail Corp	BBB	BBB	BBB	BBB	BBB
Pepco Holdings Inc	BBB	BBB	BBB	BBB	BBB
Pinnacle West Capital Corp	BBB	BBB	BBB	BBB	BBB
PPL Corp	BBB	BBB	BBB	BBB	BBB
Progress Energy Inc	BBB	BBB	BBB	BBB	BBB
SCANA Corp	A	A	A	A	A
Southern Co	A	A	A	A	A
Wisconsin Energy Corp	BBB	BBB	BBB	BBB	BBB
Xcel Energy Inc	BBB	BBB	BBB	BBB	BBB

Sources and Notes:

[1] - [5]: Preferred equity ratings are assumed equal to the company's bond ratings reported in Workpaper #1 to Table No. MJV-11, Panel B.

Workpaper #2 to Table No. MJV-11

US Electric Sample

Panel A: 15 Day Average Utility Yields and Mergent Preferred Yields

Date	A Rated Utility [1]	BBB Rated Utility [2]	A Preferred [3]	BBB Preferred [4]
3/2/2009	6.19	7.31	-	-
2/27/2009	6.25	7.42	-	-
2/26/2009	6.26	7.42	-	-
2/25/2009	6.36	7.35	-	-
2/24/2009	6.13	7.24	-	-
2/23/2009	6.11	7.19	-	-
2/20/2009	6.00	7.25	-	-
2/19/2009	6.16	7.34	-	-
2/18/2009	6.11	7.27	-	-
2/17/2009	6.06	7.24	-	-
2/16/2009	6.15	7.42	-	-
2/13/2009	6.15	7.42	-	-
2/12/2009	6.09	7.23	-	-
2/11/2009	5.98	7.20	-	-
2/10/2009	6.00	7.23	-	-
Average	6.13	7.30	6.58	7.55

Sources and Notes:
[1] - [2]: Bloomberg as of March 02, 2009.
[3] - [4]: Mergent Bond Record, February 2009 Edition.

Workpaper #2 to Table No. MJV-11

US Electric Sample

Panel B: Bond Yield Summary

Company	Year End, 2008 [1]	2007 [2]	2006 [3]	2005 [4]	2004 [5]	5-Year Average [6]
American Electric Power Co Inc	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Cleco Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Consolidated Edison Inc	6.13%	6.13%	6.13%	6.13%	6.13%	6.13%
Empire District Electric Co/The	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Entergy Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
FirstEnergy Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
IDACORP Inc	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
MGE Energy Inc	5.55%	5.55%	5.55%	5.55%	5.55%	5.55%
NSTAR	6.13%	6.13%	6.13%	6.13%	6.13%	6.13%
Otter Tail Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Pepco Holdings Inc	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Pinnacle West Capital Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
PPL Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Progress Energy Inc	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
SCANA Corp	6.13%	6.13%	6.13%	6.13%	6.13%	6.13%
Southern Co	6.13%	6.13%	6.13%	6.13%	6.13%	6.13%
Wisconsin Energy Corp	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%
Xcel Energy Inc	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%

Sources and Notes:
[1] - [5]: Ratings based on Workpaper #1 to Table No. MJV-11, Panel B. Bond yields from Bloomberg as of March 02, 2009.
[6]: { ([1] + [2] + [3] + [4] + [5]) / 5 }
The report does not publish yield data for AA-rated preferred bonds. Therefore, I assumed:
Yield on AA-rated debt = Yield on A-rated bond - {(1/2) x (Yield on BBB-rated bond - Yield on A-rated bond)}.

Workpaper #2 to Table No. MJV-11

US Electric Sample

Panel C: Preferred Equity Yield Summary

Company	Year End, 2008 [1]	2007 [2]	2006 [3]	2005 [4]	2004 [5]	5-Year Average [6]
American Electric Power Co Inc	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Cleco Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Consolidated Edison Inc	6.58%	6.58%	6.58%	6.58%	6.58%	6.58%
Empire District Electric Co/The	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Entergy Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
FirstEnergy Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
IDACORP Inc	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
MGE Energy Inc	6.10%	6.10%	6.10%	6.10%	6.10%	6.10%
NSTAR	6.58%	6.58%	6.58%	6.58%	6.58%	6.58%
Otter Tail Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Pepco Holdings Inc	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Pinnacle West Capital Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
PPL Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Progress Energy Inc	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
SCANA Corp	6.58%	6.58%	6.58%	6.58%	6.58%	6.58%
Southern Co	6.58%	6.58%	6.58%	6.58%	6.58%	6.58%
Wisconsin Energy Corp	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%
Xcel Energy Inc	7.55%	7.55%	7.55%	7.55%	7.55%	7.55%

Sources and Notes:

[1] - [5]: See Workpaper #1 to Table No. MJV-11, Panels A and C. Preferred equity yields are from Mergent Bond Record, February 2009 Edition.

[6]: { ([1] + [2] + [3] + [4] + [5]) / 5 }

The report does not publish yield data for AA-rated preferred equity. Therefore, I assumed:

Yield on AA-rated preferred equity = Yield on A-rated preferred - {(1/2) x (Yield on BBB-rated preferred - Yield on A-rated preferred)

Table No. MJV-12

Risk Positioning Cost of Equity at Wisconsin Power and Light Company's Capital Structure

US Electric Sample (Including Imputed Debt)

	Overall Cost of Capital [1]	Wisconsin Power and Light Company's Regulatory % Debt [2]	Wisconsin Power and Light Company's Cost of Debt [3]	Wisconsin Power and Light Company's Income Tax Rate [4]	Wisconsin Power and Light Company's Regulatory % Preferred Equity [5]	Wisconsin Power and Light Company's Cost of Preferred Equity [6]	Wisconsin Power and Light Company's Regulatory % Equity [7]	Estimated Return on Equity [8]
Using Long-Term Risk-Free Rates:								
CAPM using Value Line Betas	7.6%	48.7%	6.1%	40.1%	2.2%	6.6%	49.1%	11.4%
ECAPM (0.50%) using Value Line Betas	7.6%	48.7%	6.1%	40.1%	2.2%	6.6%	49.1%	11.6%
ECAPM (1.50%) using Value Line Betas	7.8%	48.7%	6.1%	40.1%	2.2%	6.6%	49.1%	11.9%

Sources and Notes:
[1]: Table No. MJV-11; Panels A - G, [8].
[2]: Provided by Wisconsin Power and Light Company.
[3]: Based on an A rating, as provided by Wisconsin Power and Light Company. Yield from Bloomberg as of March 02, 2009.
[4]: Provided by Wisconsin Power and Light Company.
[5]: Provided by Wisconsin Power and Light Company.
[6]: From Mergent Bond Record, February 2009 Edition.
[7]: Provided by Wisconsin Power and Light Company.
[8]: {[1] - ([2] x [3] x (1 - [4]) + [5] x [6])} / [7].